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AUGUST 1959

$1.00

FOOD ENGINEERING

FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION

Editor Sees

MARKETS

OR U.S. FOODS

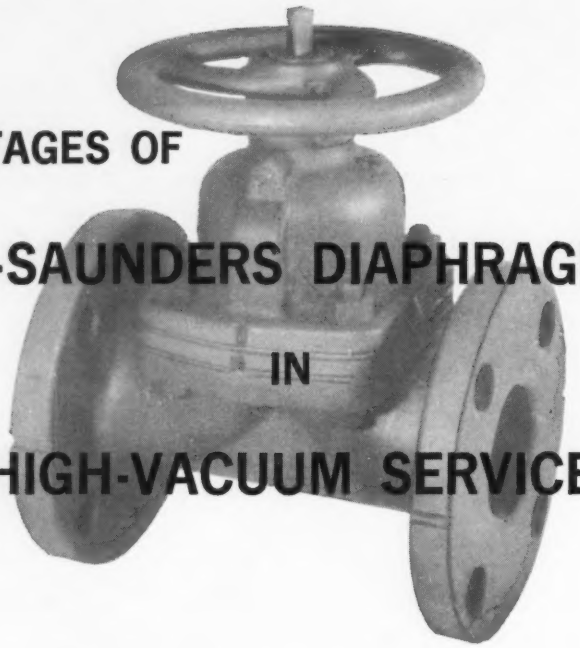
during the quarter-century

at Lausanne

page 39

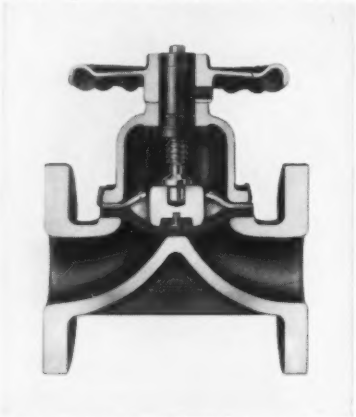
GRINNELL REPORTS ON VALVES:

THE ADVANTAGES OF GRINNELL-SAUNDERS DIAPHRAGM VALVES IN HIGH-VACUUM SERVICE



Dependable performance and long service life for vacuums down to 0.1 micron . . . with leak rates of less than 0.1 micron cubic foot/hour

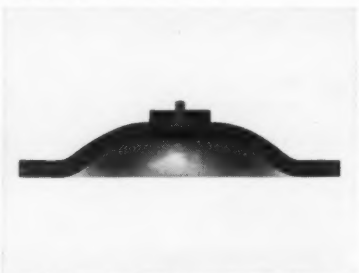
One of the most important requirements of valves for high-vacuum service is that they must be vacuum-tight at all times during their operating cycle. Diaphragm valves of the Grinnell-Saunders manufacture fully meet this requirement. When clamped between the flanges of the body and bonnet, the diaphragm is easily made vacuum-tight down to 0.1 micron — with an in-leakage rate of less than 0.1 micron cubic foot/hour. Whether in the open, throttling or closed position, the diaphragm presents a smooth, unbroken face to the vacuum side of the chamber.



Valve provides vacuum-tight seal in closed position

Rugged, nylon-reinforced diaphragms in a variety of materials

Grinnell has perfected a method of reinforcing its diaphragms with wear-resistant nylon. The result is a diaphragm that lasts longer at high-vacuum. The only part of the valve subject to service wear at any time is the diaphragm — which can easily be replaced in a matter of minutes, without removing the valve body from the system. Diaphragms are available in a wide choice of materials.



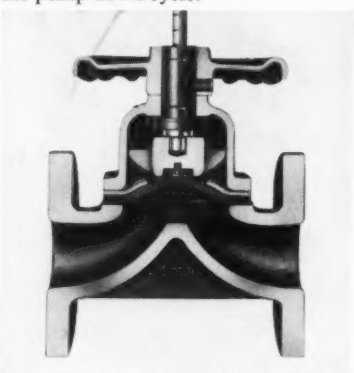
Rugged, reinforced nylon diaphragm gives long-lasting life

Contamination minimized

Construction of Grinnell-Saunders Diaphragm Valves provides separation of the working mechanism from the vacuum within the system. This isolation of lubricated working parts prevents contamination of the system from lubricant outgassing.

Large, unimpeded valve passage

The large passage of the Grinnell valve, in the open position, offers minimum impedance to the escape of random moving molecules in pumping down to high-vacuum, thus shortening the pump-down cycle.



In open position, valve passage is free and unimpeded

Special provisions:

Sealed bonnets are available for evacuation when required. Elastomer type diaphragms do not require evacuation of the bonnet. Valves with plastic diaphragms, used at elevated temperatures, do require evacuation of the bonnet for long diaphragm service life.

For more information

Get further facts about Grinnell-Saunders Diaphragm Valves. Learn how the diaphragm lifts high for streamline flow in either direction . . . and how the diaphragm seals firmly against the body weir for leak-tight closure. Write to: — Grinnell Company, Providence 1, Rhode Island.

FOOD

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You don't have to consult a French chef for the secret of making a good food product taste better. Simply start using Merck MSG. Merck is your new basic source for this flavor-enhancing ingredient. Merck's technically advanced manufacturing process assures dependable delivery in the quantities you require. Rigid quality-control procedures provide lot-to-lot uniformity of monosodium glutamate 99+% pure. And Merck's Food Research and Technical Service Staff stands ready to help you at all times. Get complete information on how Merck MSG can add the gourmet's touch to your products by contacting your nearest Merck Sales Office or writing directly to Rahway.

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MERCK & CO., INC., RAHWAY, NEW JERSEY

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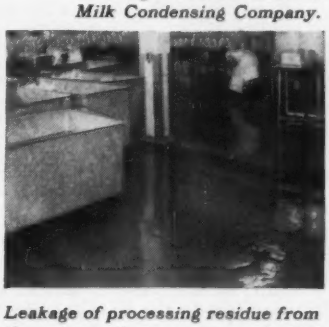
Resists corrosive effects of blood, water soaking, animal fats and brine. Monile applied in the beef kill room, smokehouse alley, sausage kitchen and lard room.—Peet Packing Co.

How MONILE FLOORS increase sanitation...cut costs

MONILE—one-piece monolithic surfacing—stops leakage of processing residue... Prevents harboring of bacteria in open joints...Resists water and grease soaking ...Withstands destructive effects of food acids, alkalies, salts, sugar, brine and strong cleansers...Stands up under heavy steel-wheel trucking, loading and impact. MONILE floors save repair, replacement or resurfacing. Bonds strongly. Applied to existing surfaces—concrete, tile, wood. Saves down-time and processing stoppage. MONILE is a product of The Master Mechanics Co.—specialists in solving problems of sanitation and maintenance for nearly a half-century. Send for illustrated brochure. *The Master Mechanics Co., 2097 Columbus Rd., Cleveland 13, Ohio. The Master Mechanics Chemicals Co., (Canada) Ltd., Toronto, Ontario.*

Lactic acid resistant Monile checked erosion, spalling and cracking of floors at Orrville Milk Condensing Company.



Leakage of processing residue from the eviscerating room to packaging area below was stopped with Monile at American Poultry Company.

Serving the Food Industry since 1913

MASTER MECHANICS

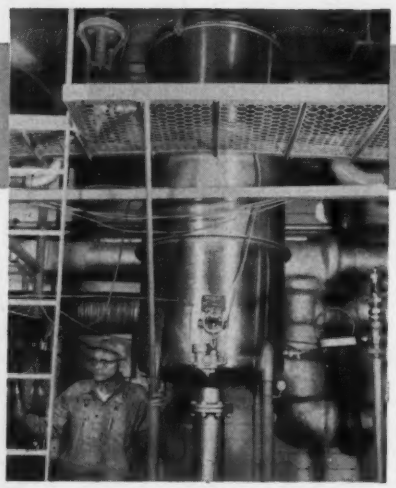
Heavy trucking of raw materials on sharp skids is resisted by Monile. Flour easily cleaned from Monile with dry mop—Wonder Bread Bakery.

Dissolved and Entrapped Air____*Out*

Color,
Flavor,
Aroma _____ *In*

with an FMC Deaerator

FMC Deaeration has proved to be an essential step in the processing of many types of foods. Products containing dissolved air, or that tend to entrap air bubbles or foam excessively, are subject to the harmful effects of oxidation within the container unless this air is efficiently and thoroughly removed. Employing a positive control of product flow, temperature and vacuum, the FMC Deaerator expells this detrimental air from the product resulting in a significant improvement in quality and appearance of such foods as tomato, grape, apple and orange juices, tomato catsup, table syrups and baby foods. Vitamins are preserved, discoloration is avoided and container corrosion is retarded. There are models and sizes for capacities of 2 to 100 gpm. For additional information simply call your nearest FMC representative.



At F. M. Ball and Co.'s Oakland, Calif. plant, two FMC Deaerators provide uniform, sanitary control in the processing of peach and apricot nectar and a variety of tomato products.

fmc
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Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
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TRENDS & FORECASTS

SPECIAL
FOOD
ENGINEERING
SERVICE to
EXECUTIVES

Average annual income of American families was $6,220, before Federal income taxes, in '58. This is 51% higher than in '47, and represents an 18% increase in real purchasing power, Department of Commerce reports.

Women will occupy more than half of new jobs in U.S. between now and '65, and proportion of white collar workers will increase sharply to 41.6%. So predicts S. L. Wolfbein, of Labor Dept.

Total U.S. exports of foodstuffs were down slightly last year to estimated $2.4 billion, while imports increased slightly to $3.4 billion.

New St. Lawrence Seaway substantially cuts cost of shipping grain from major producing areas to foreign countries, says USDA. Manufactured food products from many areas will benefit, too.

Personal spending in Britain is up 3.2% in first quarter of '59. Principal increase was for food, which accounted for ⅓ of $9 billion total.

Diversion of land to nonfarm uses will not deprive U.S. of sources of food because 5% annual increase in agricultural productivity adds equivalent of 17.5 million acres per year to farm area.

Heinz in Australia has more than doubled baby food output in last 3 years.

Pay increase ranging from 8 to 34¢ an hour, and hourly rates ranging from $1.67 to $2.70 an hour, were granted Cannery Workers Council, Teamster affiliate, by California Processors & Growers.

Supply of canned fruits for '58-59 season was about 5% less than year earlier, and canners likely will enter new season with much lower carryover.

This year's planted acreage of vegetables for processing is 4% less than in '58 and 11% below average, USDA reports. Acreage reductions are: Green lima beans, 2%; beets 9%; cucumbers, 12%; green peas, 9%; tomatoes, 19%. Increases are: Snap beans, 5%; cabbage for kraut, 5%; sweet corn, 12%; spinach, 11%.

Production of deciduous fruits is forecast at 6% above last year and 10% above average by USDA. Increases are: Peaches, 7%; pears, 13%; sour cherries, 38%; apricots, 122%; plums, 57%. Decreases: Apples, 6%; sweet cherries, 8%.

Shipments of metal cans for food first 5 months of '59 are up 18% for fish and seafood and 4.5% for meat (including poultry) but down 2.6% for fruits and vegetables (including juices), according to Department of Commerce. Shipment of glass containers for 5 months are up 17.3% for narrow-neck and 8.3% for wide-mouth.

Consumption of meat this year is forecast at 157¼ lb. per capita, compared to 152 in '58. Increase in pork will account for 6 lb. of gain.

Strawberry production for '59 is forecast at 440 million lb., down 18%.

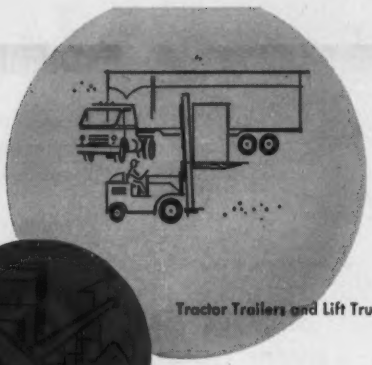
Production of frozen orange juice totaled 59.5 million gal. to May 9, 11% higher than a year earlier. Packers' stocks were 3% below '58 level.

California winery shipments for first 5 months of '59 were up 6.57% over same period of '58, totaling 50,180,658 gal. This is 3.93% above 5-yr. average.

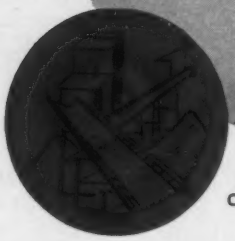
Production of cans for carbonated beverages was 42.9% higher in first 4 months of '59 than in same period of '58, totaling 163 million, American Can reports.

See Developments to Watch p. 13

Canning and Labeling



Tractor Trailers and Lift Trucks

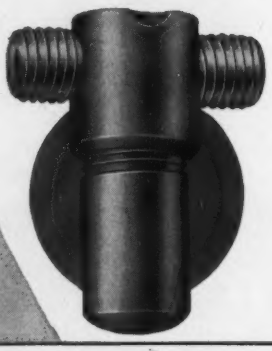


Conveyors

ALEMITE ACCUMITE® CENTRALIZED LUBRICATION SYSTEM

costs less...

Processing and Waste Disposal Equipment



to make modern lubrication economical for all plants!

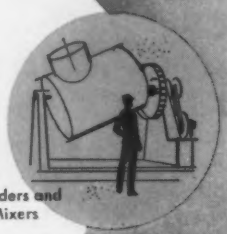
Now any plant can economically equip all sizes of machines and vehicles with a modern centralized lubrication system! The small size and simple installation of Alemite's Accumite System overcomes cost limitations. Complete with fully automatic pump, metering valves and controls, Accumite is ideal for many applications where centralized lubrication has previously been considered too costly or impractical. Yet Accumite offers all the advantages and quality of higher-priced systems.

Typical applications are: packaging, canning, labeling and textile machines . . . machine tools . . . tractor trailers, lift trucks and farm implements. Accumite lubricates either large or small stationary and mobile machinery.

All The Advantages Of "Built-In" Measured Lubrication!

- Meters exact amounts of lubricants to all bearings whenever system is operated.
- Accurately meters these shots of oil or grease: .003 cu. in., .006 cu. in., .009 cu. in. Available with adjustable fittings for applications requiring measured metering from .003 cu. in. to zero.
- Eliminates shutdown time for lubrication.
- Seals bearings against dirt, grit and water.
- Prevents bearing troubles due to neglect or use of wrong lubricants.
- Services all bearings in one operation.
- Avoids work spoilage and bearing repairs due to overlubrication.

Write For Alemite Accumite Catalog!



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Schedule of Events

August

17-21—Gordon Research Conference on Food & Nutritions; Colby Junior College, New London, N. H.
19-26—10th International Congress of Refrigeration; Copenhagen, Denmark.
23-26—National Assn. for Specialty Food Trade, annual show; Hotel Astor, N.Y.C.
26-28—International Assn. of Milk & Food Sanitarians, annual meeting; Hotel Colorado, Glenwood Springs, Colo.

September

14-21—World Scientific Meeting on Sardines; FAO Headquarters, Rome.
17—Citrus Processing Conference (SURDD); Citrus Bldg., Winter Haven, Fla.
20-25—Master Brewers Assn. of America, convention & exposition; Public Auditorium, Cleveland.
21-26—Maintenance Short Course; American Inst. of Baking, Chicago.
22-24—Inst. of Sanitation Management; Trade Show Bldg., N.Y.C.
23—Instrument Society of America, Food Industry Instrumentation Symposium & Workshop; Palmer House, Chicago.
24-25—American Soc. for Quality Control, Chemical Div. Conference; Shamrock Hilton Hotel, Houston, Tex.
25-27—National Poultry, Butter & Egg Assn., annual meeting and exhibit; Hotel Sherman, Chicago.
25-29—American Meat Inst., annual conference & exposition; Palmer House, Chicago.
28-30—American Oil Chemists Society; Hotel Statler, Los Angeles.

HORS D'OEUVRES

▶A new "happiness pill" relieves depression, increases efficiency, and inhibits appetite. How can there be happiness without avid appeasement of hunger?

▶Breakfast now is the family meal, more members being present than at any other repast. They still come home to roost.

▶It is estimated that the sea is as productive of organic food, acre for acre as the land. Had Malthus been a skin diver, his outlook would have been more buoyant.

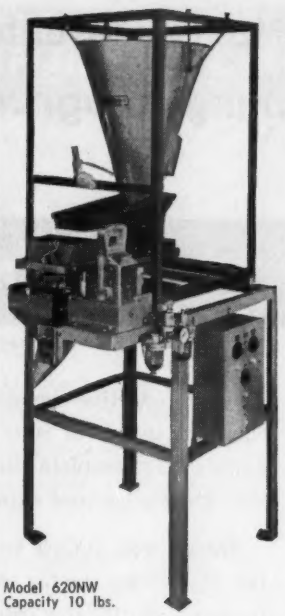
▶An engineer who devised ingenious automation for his new bakery recently drove us to the plant. As we approached, the mechanical wizard pointed with pride, then commented wistfully: "Now it's merely a marketing operation."

▶Accidents occur 5 to 20 times more often off the job than at work. So put this sign over your plant exit gate: "Loaf safely and live to labor another day!"

▶Florida's citrus industry is dreaming of new byproducts. Among them is an orange peel breakfast cereal. Well, cows like it.

▶Chicken is most popular on weekends —both the feathered kind and the other.

EXACT WEIGHT® Automatic Net Weighing Machines



Model 620NW
Capacity 10 lbs.

FOR PACKAGING, BAGGING, BATCHING, COMPOUNDING

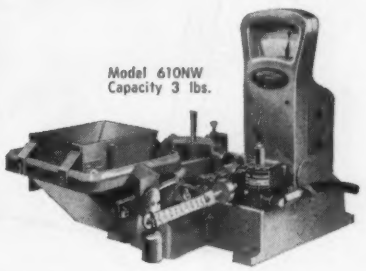
Exact Weight offers:

- Precision industrial-type scale
- Over-under indicator visual check eliminates need for separate checkweighing operation.
- Calibrated adjustments with counterweights of known value; graduated beam, poise and scale indicator.
- Design backed by 45 years of experience in specialized weighing equipment.
- Readily accessible service facilities.
- Performance guaranteed in writing.

Machine weighs and feeds dry, free-flowing materials. It weighs accurately and fast . . . eliminates guesswork . . . helps cut production costs. Write for Bulletin 3318 for details and specifications.

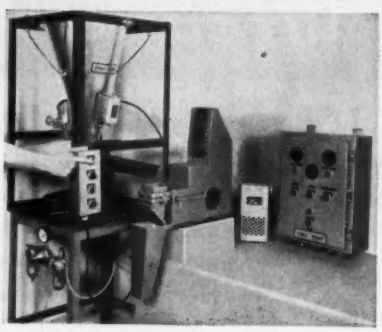
Automatic Net Weigher

Net Weigher can be supplied without the feeder machine, support frame and discharge chute. The unit may be adaptable to your specific operation. Write for Bulletin 3311.



Model 610NW
Capacity 3 lbs.

Precision Automatic Net Weighing Machine



Model 4601 NW, left, for weighing dry products with accuracies of 1/10 gram on quantities below 10 grams and one percent accuracy on quantities of 10 grams and above. Combines a high-accuracy Shadograph Scale, air-operated dump mechanism, hoppers, vibratory feeders and photoelectric controls. Models with capacities from 50 grams to 500 grams. Write for Bulletin 3363.

THE EXACT WEIGHT SCALE CO.

910 W. FIFTH AVE., COLUMBUS 8, OHIO

In Canada: 5 Six Points Road, Toronto 18, Ont.

Sales and Service Coast to Coast

Exact Weight SCALES

Find us in your local 'Yellow Pages'

BETTER QUALITY CONTROL . . . BETTER COST CONTROL

Does your cleaning program

If not, call a Wyandotte representative . . . because every food-plant cleaning program should include:

1. A SURVEY OF YOUR CLEANING NEEDS

To do an effective cleaning job, you need an expert and complete survey of your cleaning requirements. Wyandotte offers complete survey service, backed by extensive knowledge and experience.

Should you switch to automation cleaning? What's the best technique for cleaning ultra-high-heat processing equipment? How can you satisfy health department requirements? Should you install spray-cleaning equipment? What about the time, temperature, and concentration of cleaning solutions?

Wyandotte answers questions like these, and many more, every day. And this experience is available to you, to help solve *your* cleaning problems.

2. TOP-QUALITY CLEANING PRODUCTS

DELTRO — a heavy-duty, non-corrosive steam gun and spray cleaner.

MULTI-CHLOR® — a concentrated, non-corrosive germicide-disinfectant.

SERVAC® — a concentrated, all-purpose liquid acid cleaner.

G·L·X® — an all-soluble, dustless alkaline equipment cleaner.

Your cleaning program will only be as good as the cleaning products you use. The success or failure of the cleaning system depends on the selection and proper use of the cleaning compound.

Wyandotte is the world's largest manufacturer of specialized cleaning products for business and industry. Our complete line includes more than 30 products for every cleaning job in any plant. Some of these are shown at left.

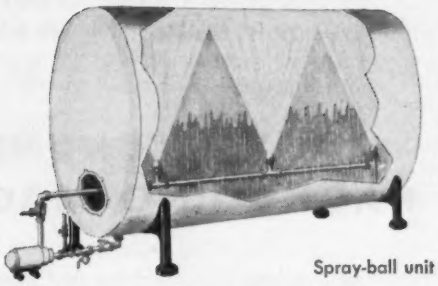
have these 3 advantages?

3. MODERN, EFFICIENT CLEANING EQUIPMENT

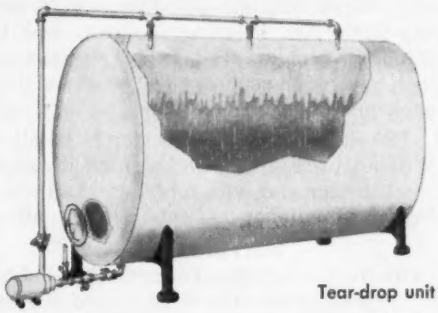
Proper cleaning equipment can be a sound, profitable investment – but it pays to know what you're doing. That's why you'll welcome Wyandotte's experience. We have, or can develop, devices and techniques for all your cleaning needs.

Take spray cleaning, for example. We have portable spray-ball units and permanently installed tear-drop units for cleaning tanks; dumbbell units for cleaning tank-trucks; and evaporator-ball units for cleaning evaporators.

Perhaps your plant will require custom-designed spray equipment. Or perhaps you shouldn't install any special equipment at all! In either case, Wyandotte has the knowledge and experience to handle your needs.



Spray-ball unit



Tear-drop unit

Wyandotte CHEMICALS

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J. B. FORD DIVISION • WYANDOTTE, MICHIGAN

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☐ Please send practical, money-saving, labor-saving, down-to-earth information on the cleaning of _____

☐ Please have your representative call on me.

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Is Packaging Machinery Economical Enough?

Economy is a favorite subject of equipment buyers who are looking for ways to cut their costs. As a result, everybody talks economy because everybody wants economy. But how "economical" is economy supposed to be?

Obviously, your product has to look good to the consumer. Yet it must go into the package fast and with the least cost. The more time, labor and money it takes, the less you have left for profit.

With costs and competition going the way they are, economy has got to be a lot more "economical" than it used to be. Not only for products you're already packaging automatically, but for those you haven't even considered. Because automatic *packaging saves you money and improves your competitive position. That is, if it's economical* enough.

HOW *ECONOMICAL* DO YOU THINK PACKAGING MACHINERY SHOULD BE?

Take the example of a machine that automatically forms, fills, and seals bags—it can package anything from hardware to peas and beans. Your product may be entirely different, but look how much economy you must get from the packaging machine itself.

The machine should be simple in all ways. Without unnecessary complexity, it can do its work better and with less cost. And that savings in time, labor and care add to your profit.

You can really save
with the Triangle Bag Former, Filler and Sealer
—basic single-tube design . . . no involved adjustments . . . needs less operating attention and maintenance than normally expected.

The machine should be fast. Because greater output per minute costs less per unit. And that lower cost gives you competitive advantage *and* more profit.

You can really save
with the Triangle Bag Former, Filler and Sealer
—55 bags per minute output—consistently . . . equal to complex twin-tube designs in many cases.

The machine should be versatile. Your line already includes more than one product in more than one package size. And, there are even more in the future. Bagging materials will change as well. But a new machine for each is not economical. Nor is costly downtime for machine change-over.

You can really save
with the Triangle Bag Former, Filler and Sealer
—handles all heat sealable materials . . . fast, simple change-over without delicate or involved adjustment.

How *more* economical could packaging machinery be? Simplicity of design, speed of operation and versatility for present and future needs—*these* are the efficiencies that the truly economical machine must have.

Regardless of what kind of product you're packaging, see Triangle when you are considering packaging equipment. We don't make equipment for *every* packaging need, but why take the chance of overlooking the real advantage our equipment offers you.

Write and describe your packaging needs. Let us send our full color 3-D slides and viewer of the equipment that will do your job (post paid both ways). No obligation, of course.

35 YEARS

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TRIANGLE
PACKAGE MACHINERY COMPANY

6637 W. Diversey • Chicago 35, Illinois
Telephone TUxedo 9-0200

DEVELOPMENTS TO WATCH

Sonic energy effectively loosens dirt from fruits and vegetables, then water flushes it away in method studied at SRI. Equipment and operating costs may be lower than for conventional methods.

SRI technologists are experimenting with sonic device that determines qualities of certain foods without destructive testing. And they have found ways to pop garabanzo beans in search for new snacks.

New way to detect minor impurities is to bombard product with neutrons. This radioactivates components, which emit characteristic radiation to permit detection by special counters, Armour Research Foundation reports.

New techniques for separating chicken meat from bones have been developed by Meat Separator Co. Vibration in basket shakes meat loose, and bone fragments are separated on "pressure water table" (bones sink faster).

Electric load-cells weighing to 0.05% accuracy are installed under 5,000-gal. tank at Thompson's Honor Dairy. Remote reading, space saving, and lower cost for multiple tanks are advantages, says Baldwin-Lima-Hamilton.

Cottage cheese can be stored 5 months in salt solution, in plastic-lined cans, under refrigeration. Liner top is twisted to exclude air. Salt is washed out when cheese is to be used.—Dairymen's League.

Way to dry yeast flavoring component for use in "instant" bread has been devised at Univ. of California for QMC. Mobile unit is being built to automatically mix and bake bread in field in 35 min.

Wheat flour has been reacted with ethylene and propylene oxides by USDA. Result is flour that mixes more readily with water to form pastes having less tendency to thicken and gel—for thickeners, adhesives, coatings.

New process produces 100% protein from soybean flakes. Protein will be marketed as food supplement in joint venture by General Mills and J. R. Short Milling Co. It is light in color, bland in flavor.

Vitamin C in guava paste will be preserved by heating to critical temperature in less than 60 sec. at 2,000 lb. per hr. Overcooking will be avoided in Tropical Fruit Products installation.

Maine sardine is good source of amino acid, B. E. Proctor, MIT, reports.

Shelled nuts in transparent film retain flavor and color for many weeks if protected from light and oxygen, or treated with antioxidants, says USDA.

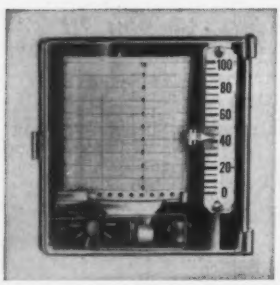
Oven-ready turkeys will be packaged in aluminum foil pan to compete with growing list of convenience foods, according to National Turkey Federation.

Standard design for pint and half-gallon rectangular ice cream cartons has been accepted to avoid machine adjustment when changing carton suppliers.

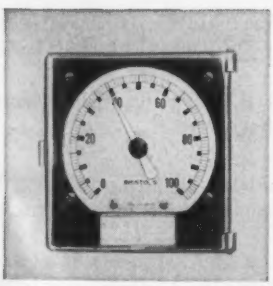
Flexible seamless metal tubing that can be shipped flat and inflated to shape at point of use has been developed by Calumet & Hecla. Among possible uses are packaging and portable piping for irrigation.

Typical installation of Bristol Metagraphic receivers. This modern instrument installation is part of main control panel at Celanese Corporation of America's new Celanese acetate film plant at Belvidere, New Jersey. Panel designed and built by Panellit Inc., Skokie, Illinois.

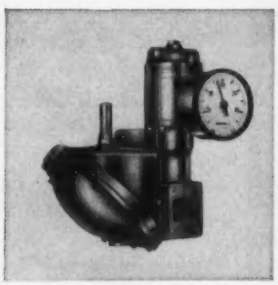
...and behind every panel, precision



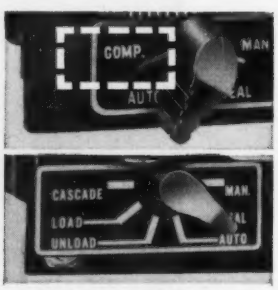
Metagraphic Recording Receiver... plugs and unplugs in 5 seconds. More than 36 pneumatic models, many electronic Dynamaster* potentiometer and bridge instruments—all with easy-to-read, human-engineered scales and charts.



Metagraphic Indicating Receiver... feature 9 inches of effective scale length, complete 10-second interchangeability with recorder of same type. Functionally colored pointers, plus long scale length makes distant reading easy.



Metagraphic Pneumatic Transmitters measure temperature, pressure, vacuum, absolute pressure, differential pressure, flow, liquid level or mechanical motion. Transmit on universal 3-15 psi pneumatic signal.



Pneumatic Control Stations allow utmost in operating flexibility. Four-position station (top) for computer-controlled refineries and chemical plants. Six-position station (bottom) for bumpless transfer in cascade systems. Many others available.

regardless of the nature of your measurement or control problem,

Bristol has matching miniature instruments for it

• Pneumatic transmission and control • Electronic potentiometers and bridges • Instruments for process computer systems • Electronic measurement—pneumatic transmission • Telemetering instruments • Recording gauges

Now, for the first time, you can get matching instruments for graphic panels, consoles, or other set-ups for all your process requirements—including electronic, pneumatic, telemetering, and gauge measurements. Bristol miniature instruments all have 5" x 5⅛" panel dimensions, fit 4 9/16" square cutout, and harmonize perfectly with each other.

Pneumatic Transmission. Bristol Pneumatic Metagraphic receivers operate on a universal 3-15 psi signal. They indicate or record *pressure, differential pressure, absolute pressure, liquid level, flow, temperature, mechanical motion and many other variables.* Indicators and recorders interchange on a full plug-in basis. There are 36 receivers, 38 controllers, and widest variety of transmitters in the industry to choose from.

Process Computer Control Instrumentation. Now available: two entirely new Metagraphic control stations, for use with process control computer systems.

Dynamaster* Electronic Potentiometers and Bridges, using same time-proven principles as full-size instruments, can provide measurements from such electrical sensing elements as thermocouples, strain gauges, pH electrodes, photoelectric cells, etc. Same high accuracy and reliability as full-size Dynamaster instruments.

Electronic Measurement—Pneumatic Transmission. The Miniature Dynamaster Electronic Potentiometer and Bridge Instruments, described above, are now available as pneumatic transmitters—3-15 psi signal. They will make any measurement that can be transduced to an electrical quantity and transmit that measurement pneumatically for Metagraphic recording, indicating, and automatic control.

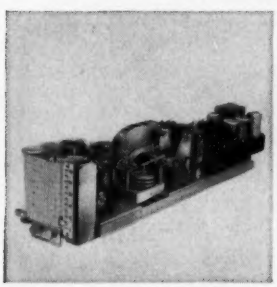
Telemetering. Metameter* telemeter receivers, in 5" x 5⅛" case, can receive the same measurements from remote locations as their full-size counterparts. Can be installed miles from transmitter center.

Standard Pressure Gauges . . . now also offered in miniature-case, plug-in and non-plug-in types. Ranges from 0-3 through 0-100 psi.

For complete data, write The Bristol Company, 115 Bristol Road, Waterbury 20, Conn. 8.50

**T.M. Reg. U.S. Pat. Off.*

BRISTOL measurement and control



Series 663 Electronic Dynamaster potentiometer. Motor can drive almost any auxiliary devices — retransmitting slidewires, alarm contacts, analog-to-digital encoders. Available for electronic measurement—pneumatic transmission.

Metagraphic Pneumatic Controllers can plug in on receiver case, as shown here, or directly at controlled process. Proved force-balance operating principle requires almost no moving parts, nothing to wear out. 38 different models.

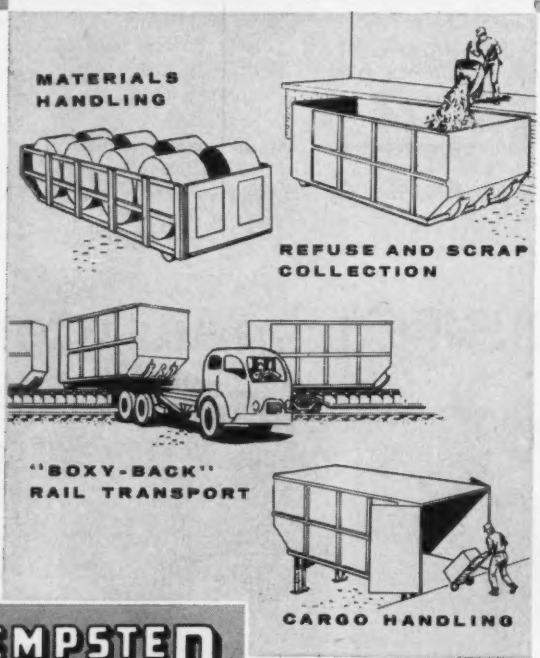
BRISTOL

TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

DEMPSTER® DINOSAUR® ... Picks Up 40 Cubic Yard Detachable Containers—15 Ton Loads

The System of a Hundred Uses



Here's the detachable container system of a hundred uses. The simple, powerful, one-man DEMPSTER-DINOSAUR automatically picks-up . . . hauls . . . dumps . . . puts down . . . or pushes off on dock, loads limited only by the size of the truck or by highway restrictions. All handling operations are performed without the driver leaving the cab . . . no cables to hook on . . . no chains . . . . . . sheaves . . . winches. Models available for single or tandem axle chassis . . . 22,000 to 30,000 pound gross loads. Containers, six to 40 cu. yds. and over, available for refuse, scrap, materials handling, cargo, "boxy-back" rail shipments and many other uses. Write today for brochure or for a demonstration in your city.

Patents Pending
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WHO'S BUILDING WHAT...

Monthly Report: Food firms to spend $5,877,508 for expansion

Proposed Work

Carlings Breweries Ltd., Toronto, brewery facilities to cost $2,000,000.

Contadina Foods, San Jose, Calif., $200,000 plant.

General Foods Corp., Dedham, Mass., warehouse and distributor center. Cost: $120,000.

Liberty Fish Co., Philadelphia, seafood plant. Cost: $150,000.

Meat Products Co., Stockton, Calif., $200,000 plant additions.

Puritan Food Sales Ltd., Halifax, N. S., $250,000 cannery.

J. Reisman & Sons, Pennsauken, N. J., bakery. Cost: $200,000.

J. Fred Schmidt Packing Co., Columbus, O., $300,000 meat packing plant.

Stop and Shop Inc., Dedham, Mass., $250,000 dairy plant.

Contracts Awarded

Albion Poultry and Egg Co., Dallas, $185,683 poultry and egg processing plant.

M & S Foods, San Diego, $400,000 warehouse.

Pepsi-Cola Bottling Co., Quincy, Ill., $260,000 bottling plant.

Thames Valley Poultry Co., Chatham, Ont., poultry processing plant. Cost: $110,000.

University of Wisconsin, Madison, Wis., $251,825 enzyme laboratory.

Others

Coca-Cola Bottling Co. is building a 12,000 sq. ft. warehouse at Concord, Calif. Building will be ready for use in October. Design of building allows for construction of a complete bottling plant at a later date.

Empressa Industrial Pesquera del Sur S.A. is constructing a $1,000,000 herring processing plant near Rawson in Southern Argentina. It will handle an estimated 80,000 ton annual catch.

J. A. Folger will build a modern coffee plant on a 20-acre site in New Orleans. Construction is scheduled for completion next summer.

PICKLED in a 4% brine solution!

CHOKED
in a tornado of abrasive dust!

FROZEN
for weeks at 75° C below zero!

BURIED ALIVE
in thick, sluggish mud!

nothing . . . but nothing stops Super-Seal open-type motors

Thanks to exclusive Poxeal and Silco-Flex insulations, Super-Seal motors have shown endurances that even enclosed motors couldn't match. Results and reasons available from your A-C representative or distributor. Or write General Products Division, Milwaukee 1, Wisconsin

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National Certified Food Colors capture the full beauty of natural fruits at their very peak of flavor. With unerring consistency, they reproduce those appetizing colors time after time..."telegraphing" the flavor before you actually taste it.

We have helped food processors use color creatively for more than 50 years. With the broadest range of primary and secondary colors made, we can match any shade you desire. We'll gladly put our long experience to work for you.

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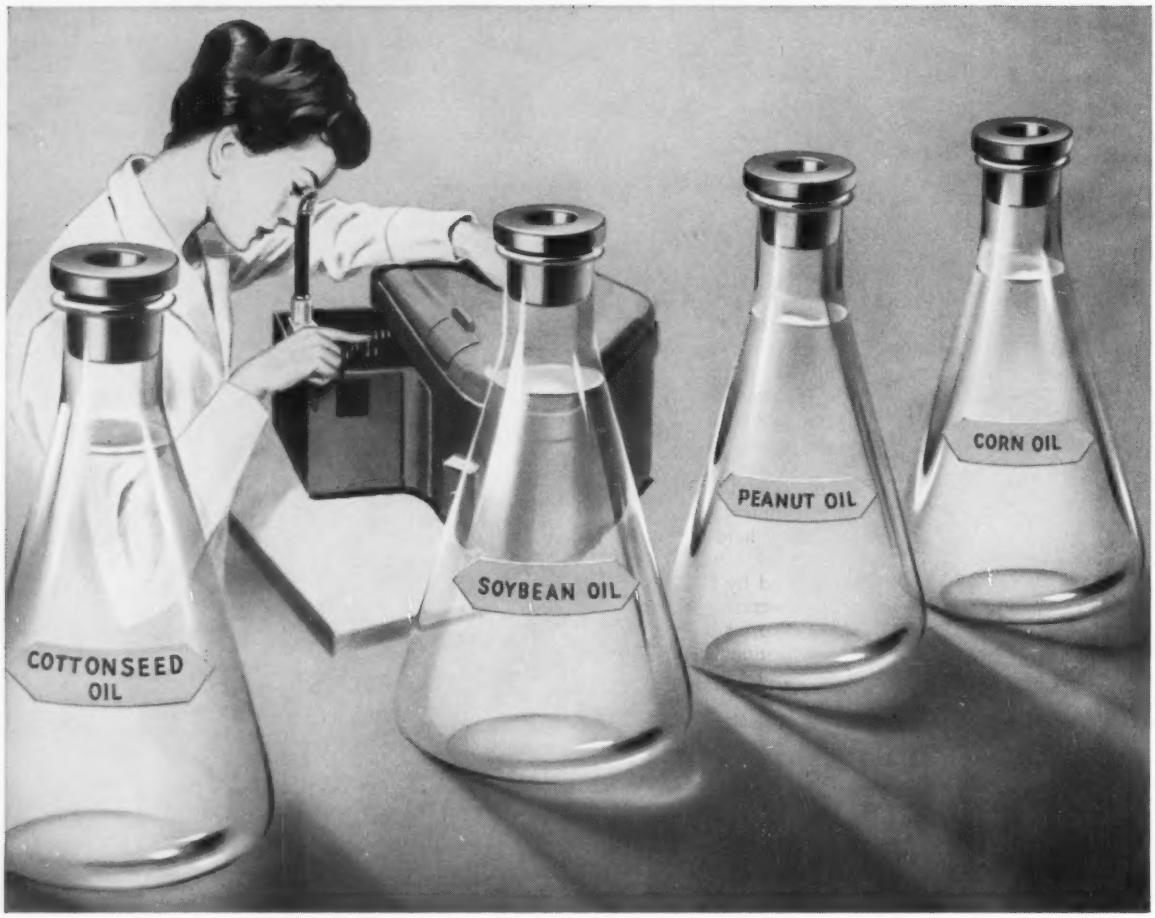
Allied Chemical



The more you can see through 'em—the faster you'll sell 'em

Filter edible oils with Celite filter aids

IN THIS ERA of self-service, clarity and sparkling brightness have become synonymous with flavor—in the shopper's mind's eye!

No matter what type of edible oil you're processing, you'll be sure of the clarity and sparkling brilliance your customers look for with Celite* filter aids. Every cubic inch of these diatomite particles presents over 5,000,000 microscopic "filters" to passing fluids . . . removes the most minute solids and colloidal matter which could otherwise affect clarity or shorten shelf life. And for any degree of clarity desired, Celite gives the fastest flow rates obtainable.

Many food technologists have found that the quickest and easiest way to solve a filtration problem is to call a nearby Celite field engineer. He can tell you which of the many Celite grades will best meet your needs. Why not call today for a no-obligation analysis of your filtration operations? Or write to Johns-Manville, Box 14, New York 16, N.Y. In Canada, Port Credit, Ontario.

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JOHNS-MANVILLE JOHNS-MANVILLE JM PRODUCTS

Hit Tactics in Big-Chain Dealings

"Why hasn't FTC curbed the flow of cut rates and other competitive advantages now going to big retail chains? This is the question pursued in Rep. James Roosevelt's Small Business Subcommittee hearings.

The members find price discrimination rampant. And there's indication that not only small retailers but also many producers and wholesalers would like to see the tactics stopped by direct application of the Robinson-Patman Act.

Concentration in food retailing is seen accelerating. FTC's recent interim report on its major "Economic Inquiry Into Food Marketing" (FE Feb., p. 19) shows that nearly three-fourths of the acquisitions of retail food stores by chains have taken place in the last 4 yr. This 'pressures' the small retailer more acutely than ever. Big chains can—and obviously do—drive hard bargains with suppliers (see special article p. 42).

There discriminatory tactics were cited by H. Bison, Jr., of the National Assn. of Retail Grocers:

Suppliers donate sales and clerical help (at one time, a big chain had 200 employees of various suppliers working gratis in the stores. . . Shelf and display space is sold suppliers on a highest-bid basis. . . Suppliers get demands to pack their regular goods under chain labels at 20% cuts in prices. . . Production of goods by the chains themselves has jumped 21% since '54, and under threats of making more, chains force suppliers into lower-price deals. . . Pressure is applied in demands for advertising and promotional allowances.

Chairman Roosevelt thinks more information is needed before he calls on FTC to testify. He further feels that certain of the questions may be outside the Robinson-Patman scope.

Time Peters Out on Color Bill

Despite all the groundwork, delays in setting up hearings appear at this writing to have smothered chances for color additive legislation in this session of Congress.

It had looked as though FDA had everything streamlined to carry its bill. But then industry men sought out their Congressmen and voiced a variety of differences. There's particular pressure for a broad easement on long-used colors.

Accordingly, the House Commerce Committee is letting the bill 'cool in the hopper'—a common move with controversial legislation to allow time for clarification of points.

Army Calls Off Rayed-Food Feeding

GI volunteers had been experimentally eating rayed foods. And extensive plans were afoot for further tests of this kind on completion of the Army's new irradiation facility at Lathrop, Calif.

But these human-feeding projects have now been cancelled after demonstration that certain foods take on radioactivity when exposed to high-energy electron beams and reactor fuel rods.

Thus, says Herbert Loper, Asst. Defense Sec'y for Atomic Energy, there must now be a thorough probing of the nature and effects of such induced radiation before a reinstatement of the program can be considered.

At lower levels of exposure (under 6 megarads from cobalt 60), foods take on no measurable radiation. Foreseen, then, are careful control procedures to keep test foods free of hazardous residues.

The Army might reactivate such work on an experimental basis, keeping radiation of the items well under those of comparable market foods. It is to be noted that Public Law 85-929 presently forbids distribution for general consumption of ray-treated foods containing any such residues.

Exonerates Dairies in Dealer Case

Manufacturer-dealer arrangements in the ice cream business have now been legally blessed by this favorable climax in the case hanging since '55 against leading dairy interests:

▶FTC Hearing Examiner John Lewis has ruled that there's no evidence that the 9 major ice cream makers and 55 subsidiaries used unfair competitive methods.

His decision, still subject to review by the full FTC, would dismiss charges against Carnation, Borden, Beatrice Foods, National Dairy Products, Pet Milk, Fairmont Foods, Arden Farms, Foremost Dairies, and H. P. Hood & Sons.

It was charged that these firms gave dealers equipment and special services to induce them to handle their products exclusively. These practices allegedly increased concentration, forced smaller firms out of business, and pressured dealers away from selecting frozen foods of their own choice.

Examiner Lewis not only ruled out these charges but found further that the exclusive agreements have had little practical effect. "For," he says, "in this field most dealers only do business with a single supplier anyway, whether a formal agreement requires them to do so or not."

Short-Weights Under Fire

FDA is driving harder on short weights, a check having revealed numerous items as repeatedly deficient.

In one sampling, 19% of the packages were found under-declared weight. Ground spices were the worst offenders—deficient as much as 10%. Others cited: Coffee, tea, olives, shrimp, oils, peanut butter, candy.

BRIEFS

Standard for peanut butter has now taken form as an official proposal. Called for is a peanut product running no more than 5% optional ingredients. In contrast, some current butters show 'cuts' of as much as 20%.

No more shrimp from Hong Kong for a while. U.S. found out Red China has been supplying this seafood. So permission for new imports from H. K. await tighter procedures assuring non-Red goods.

Ice cream people aren't happy with FDA's draft of standards for their products. They've filed a flood of exceptions to the proposals. Court tests are portended if the Agency posts really strict controls.

JAGENBERG

Colletta

PORTABLE BENCH LABELER

Highly Versatile

Fast Changeovers

Blister-free Application

Precision Built

The Colletta bench-type labeling unit is the ideal solution to short run labeling problems.

Basically a semi-automatic, hand-fed unit, it is readily converted to an automatic machine by use of auxiliary attachments providing fully mechanized intake and discharge of objects being labeled. Labels are applied with full-surface glue adhesion to a range of shapes in bottles, jars, boxes, books, etc. up to diameter or height of 5½". Size changes are made within a maximum of five minutes.

Designed and manufactured by Jagenberg of Dusseldorf, this Universal Labeler is now sold exclusively in the United States by Pneumatic. Write for Bulletin 138 which provides detailed information. Better still, send in samples of objects presenting production labeling problems at your plant. A prompt analysis and quotation will be submitted.

PNEUMATIC SCALE CORPORATION, LTD. 91 Newport Avenue, Quincy 71, Mass. *Sales Offices: New York; Chicago; Dallas; Rochester. Agents: Fred Todt Company at Los Angeles, San Francisco and Seattle; Rockwell Pneumatic Scale Ltd., Edgware Road, London, N.W. 2, England; O.R.M.A., Paris 8, France. Subsidiaries: Delamere & Williams Co., Ltd., Toronto; Carbert Manufacturing Co., Inc., Cambridge, Mass.*

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and with

PFIZER L-LYSINE

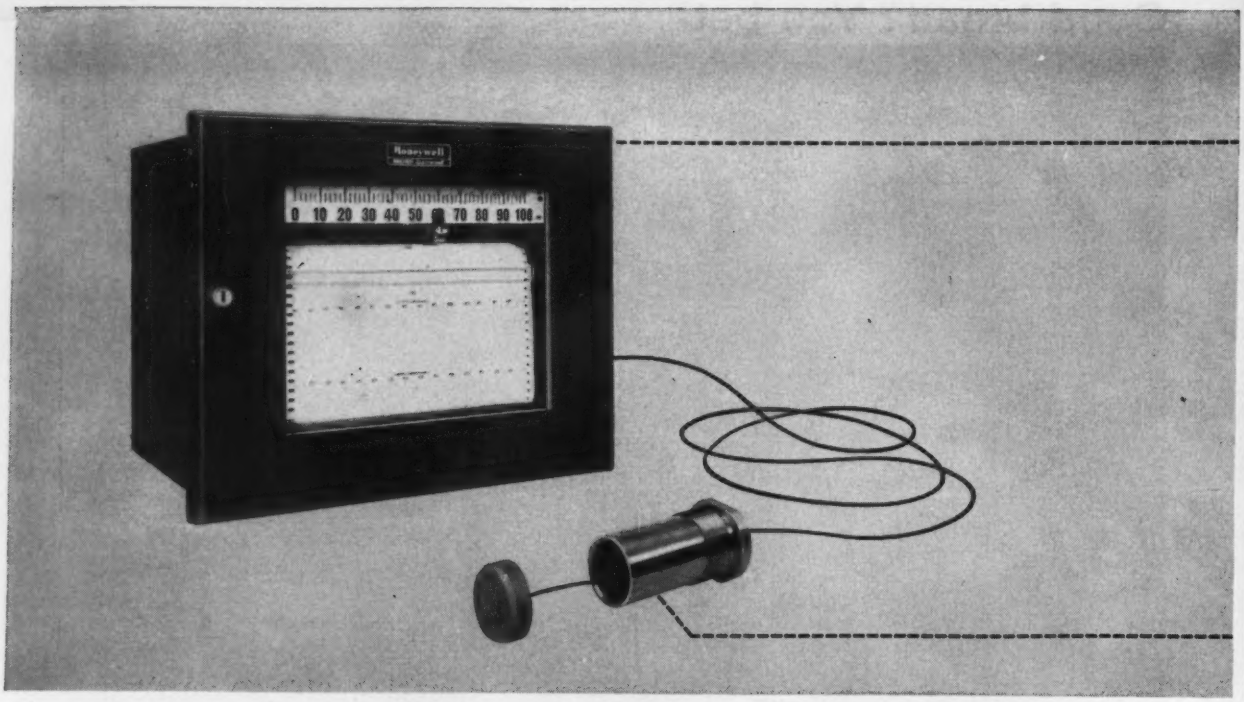
it's the most nourishing bread in history

● More and more, today's nutrition-minded housewife is looking for *high quality* protein in the bread she buys. Now with Pfizer L-Lysine, the super protein factor, you can offer a product that meets her high quality protein requirements... a product with more powerful promotional opportunities than you have ever had before. When you add Pfizer L-Lysine to your specialty nutritional bread, the protein value of that bread is raised to a level closely approximating high quality animal protein. In addition, adding the pure amino acid Pfizer L-Lysine, does not affect the taste and texture of your bread, as may be the case with other types of protein supplements.

Your specialty nutrition loaf, when protein-balanced by the addition of Pfizer L-Lysine has these important advantages:

1. It is a self-sufficient source of protein.
2. The protein has double the muscle tissue building power of the protein in breads not balanced with L-Lysine.
3. Three and one-half slices of protein bread fortified with L-Lysine are equal in protein value to a whole egg.
4. It helps build healthier appetites for children.

Capitalize on this important "Family health bonus"—it means increased nutritional value to today's health-conscious homemaker... and more sales to you.

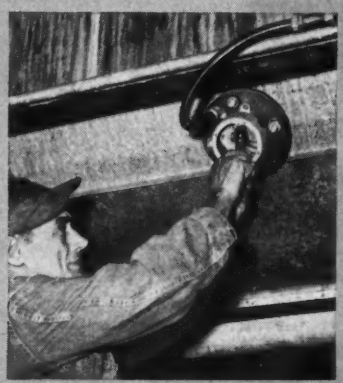


End-point control

Install the AMIF end-point control system in one day

After holes are cut in renderer walls, sleeve is welded into place . . .

the sensing element is then screwed into the threaded sleeve, and . . .



leads from the sensing element are connected to the *ElectroniK* recorder.

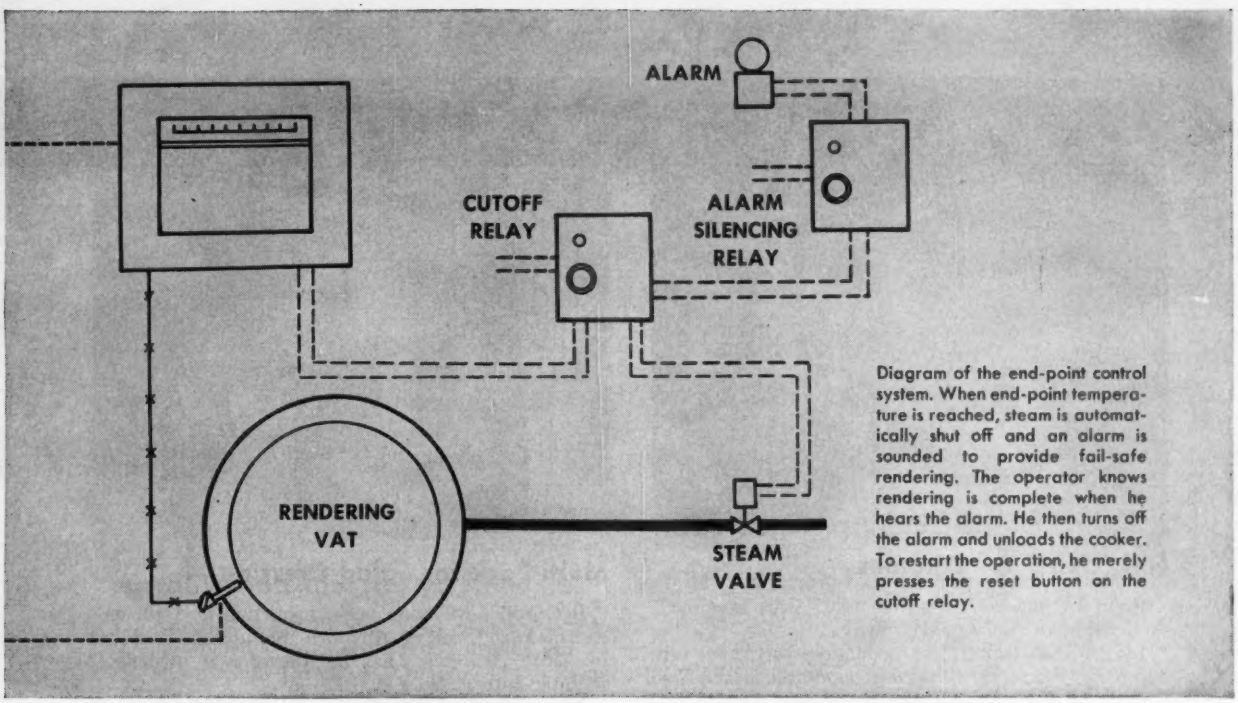


Diagram of the end-point control system. When end-point temperature is reached, steam is automatically shut off and an alarm is sounded to provide fail-safe rendering. The operator knows rendering is complete when he hears the alarm. He then turns off the alarm and unloads the cooker. To restart the operation, he merely presses the reset button on the cutoff relay.

improves dry rendering

AMIF *system prevents under- or over-cooking*

Maximum production of edible and inedible fats and high-grade cracklings comes only with close control of end-point temperature. Control of this variable is extremely critical, because temperature increases very rapidly at the point in the cook when moisture is at a minimum. AMIF system provides the sensitive, accurate control you need. It can bring you consistently higher yield and better color and keeping qualities, plus savings in heating costs . . . and can be used in both vacuum and pressure rendering.

The system *directly* measures liquid fat temperature. It consists of an *ElectroniK* strip chart recorder connected to a special thermocouple installed in the jacket of the rendering vat. This rugged thermocouple is made of specially tempered metal to resist shock and abrasion, and is flush mounted for freedom from obstruction. Its proximity to the charge makes it extremely sensitive to product temperature change. This thermocouple flashes the complete rendering story to the recorder, which keeps a continuous record of what goes on in the vat . . . shows at a glance when end-point is near or has been reached. It even reveals temporary stops of melter paddles.

The system can be equipped with automatic control to shut off steam and sound an alarm, enabling the operator to dump the cooker load at the critical end-point.

This basic temperature measurement method was pioneered by the AMIF on edible fats and oils. Subsequent work by Honeywell engineers with leaders in inedible rendering has further proved the distinct advantages of the system.

Your nearby Honeywell field engineer can give you complete details on this control system. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

H HONEYWELL *First in Control*

Foil "Skin" for Potatoes

Rigid foil potato jackets from Ekco-Alcoa have made their debut in the suppliers' market.

Ideal for such specialties as potatoes parisienne with bacon and cheese, or whipped potatoes, the jackets hold 5 fl. oz. of mounded potatoes.

Ordinary mashed potatoes may be filled into the containers and frozen, then served at the dinner table—all in the same bright container.

Target markets for the rigid foil jackets include frozen food packers and restaurants—particularly those restaurants specializing in "take-home" meals.

Circle 300 on Reader Service Card

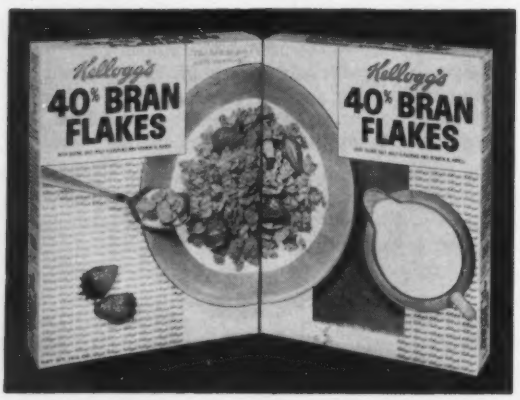
Multi-Pack for Salad Dressing

Best Foods will soon begin marketing its Hellman's "Salad Magic" in an attractive multi-pack. Produced by Mead Packaging Co., the carrier is a single-lock, multiple-unit skeleton design.

Maximum single unit exposure helps achieve a "billboard" effect. The added rigidity of the turned over edge increases package strength and stacking adaptability.

The locking effect is strong enough to eliminate the need for packing or padding between the two bottles.

The bleached sulphite kraft carton is offset printed in green and brown. Circle 301 on Reader Service Card



"New Look" for Cereal Line

Kellogg Co. will soon introduce housewives to what it calls "the New Look in cereal packages." Soon Kellogg's 40% Bran Flakes will appear on grocery shelves in a package designed to offer strong appetite appeal to consumers.

Front and back panels of the new package are similar. There are no blurbs or premium announcements, just a trademark background and illustrations of a strawberries and bran breakfast. Stacking of alternate front and back panels creates the full breakfast scene shown above.

Foil for Scout Cookies

A sales boost of 50% has been reported by the Girl Scouts following adoption of a new colorful aluminum foil wrap for cookie packages.

Designed and developed by Dobeckmun Co., the packages use a different pastel colored foil to identify the cookie variety. The designs feature gay floral motifs and pictures detailing the history of the organization.

The cookies are made in five varieties: chocolate vanilla sandwich creams, thin mint, chocolate chip, butterscotch, and four-flavor creams.

Circle 302 on Reader Service Card

Vegetables in Lithographed Cans

Lithographed Metal Cans are now used to package Key Club Brand vegetables. In this unusual use of metal lithography, Fall River Canning Co. is using #300 cans supplied by Continental Can Co.

The can size was selected to meet the needs of the average household which the Census Bureau has computed as slightly less than 3½ persons.

Pea cans are lithographed in green, red, white, yellow, and blue. Corn cans use gold in place of green. Cans feature a pictorial band illustrating contents as well as a vignette illustration of the vegetable.

Circle 303 on Reader Service Card

A Bright Look for Corrugated

A new process developed by Progress Lithographing Co., Cincinnati, to add a colorful new look to the functional corrugated carton. The process allows four to six color reproduction from paintings, sketches or color photography.

Called Pre-Lith, the system accomplishes the full-color lithography prior to combining with the actual corrugations and inside liner. This is done on long rolls on bleached, coated, or natural board liner. Special inks resist scuffing and high temperatures.

The company supplies the basic lithography.

Circle 304 on Reader Service Card

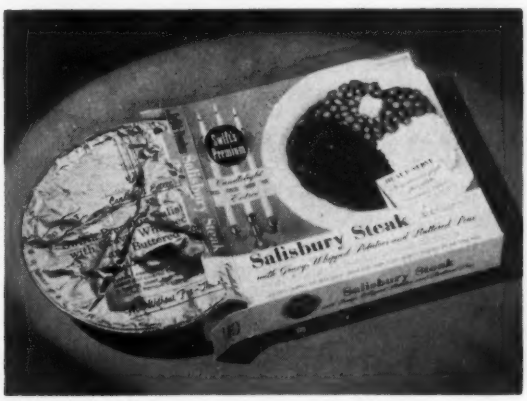
Market 2 Fruit Juice Blends

Fast gaining popularity in the New York City area are Duffy-Mott Co.'s "AM" and "PM" beverages.

"AM" is a blend of five fruits: Orange, pineapple, apple, prune, and apricot. The company reports that the drink is fortified with "more vitamin C than orange juice and more vitamin A than any other single fruit juice".

"PM" is a blend of apple and grape juice. It is fortified with vitamins B-1 and B-2.

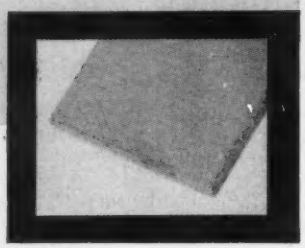
Both drinks are packed in tall, lithographed cans holding 1-qt.



Packer Markets Frozen Dinners

Now in national distribution is Swift & Co.'s new Candelight Entree line. Four main dishes make up the series: Chicken and biscuit dumplings; salisbury steak with gravy, whipped potatoes, and buttered peas; fried chicken and french fried potatoes; and turkey and dressing with gravy and buttered green beans.

The meals are packed in a circular foil tray attractive enough to be used as a serving dish. This is fitted with a foil cover and packed in a colorful high-gloss waxed carton. One face of carton permits horizontal display, the other vertical.



Why Victor 475 Conveyor Belting Is The Favorite Among Food Plants

For cleanliness that is a *must* in light food processing conveying operations – choose Victor 475 Conveyor Belting. Impregnated with Victor's own Neoprene compound, coated with Hycar, Victor 475 is a solid woven belt press-cured for a smooth surface that can't check or peel . . . resists food acids, oils and moisture . . . cleans easily with hot water.

You can choose Victor 475 Conveyor Belting, black or white, in a wide range of widths and thicknesses. Also available in Special Surface Application for specific operations.

You'll want to know more about longer-lasting, wear-resisting Victor 475 Conveyor Belting. For complete details, write today. ® 1867

A COMPLETE LINE, including: Neoprene Belting • Solid Woven Belting—untreated, impregnated, coated—many widths and plies • Canvas Stitched Belting • Hycar Belting • Belting Specialties.

Victor
Batata & Textile Belting Co.
53 Park Place, New York 7 • 300-306 W. Hubbard Street, Chicago 10
Factory: Easton, Pa.

Packages & Products

FROZEN COFFEE CONCENTRATE packed in an aerosol can is marketed by Kwik Kafe Coffee Processors of America, suppliers of coffee concentrate for vending machines. The 6-oz. can holds enough product for 20-25 cups.

News From Kraft Foods

Extensive advertising and merchandising campaigns are being used to launch several new products from Kraft Foods Co.

Introduced nationally is a line of ice cream sauces and toppings. Flavors are chocolate, vanilla, caramel, strawberry and pineapple.

Test marketing of a barbecue sauce has proven successful and hold high sales potential. A blend of 19 spices, the sauce contains fruit nectars to soften the harsh flavors characteristic of many barbecue sauces.

Packaging Briefs

4-Color Lithographed carton is boosting sales for Dallas City Packing Co.'s heat and serve pizzas. Cartons are by Milprint. (305)

Anti-Fog transparent polystyrene film, Trycite, is now offered to food packagers by Dow Chemical Co. (306)

Rigid Polyethylene jug holding a gallon of liquid is new product of Plax Corp., Hartford. (307)

Bag-in-a-Box package is being used for Borden's Super Starlac instant dry milk. Bag is a laminate of foil, polyethylene, and paper, pre-attached to the inside of the foil laminated box. Foil is from Alcoa. (308)

Inflatable Rubber Pillows from U. S. Rubber now protect fruits shipped cross-country in freight cars. Called Shor-Kwik, pillows are used by Reter Fruit Co., Medford, Ore. (309)

Circle key numbers on Reader Service Card

Just Between You and Your Customer

The first purchase of a new product may be faith in a respected name . . . but the second purchase is a matter of confidence . . . confidence that flavor and quality will always be the same. In keeping that faith, protective packaging is vital.

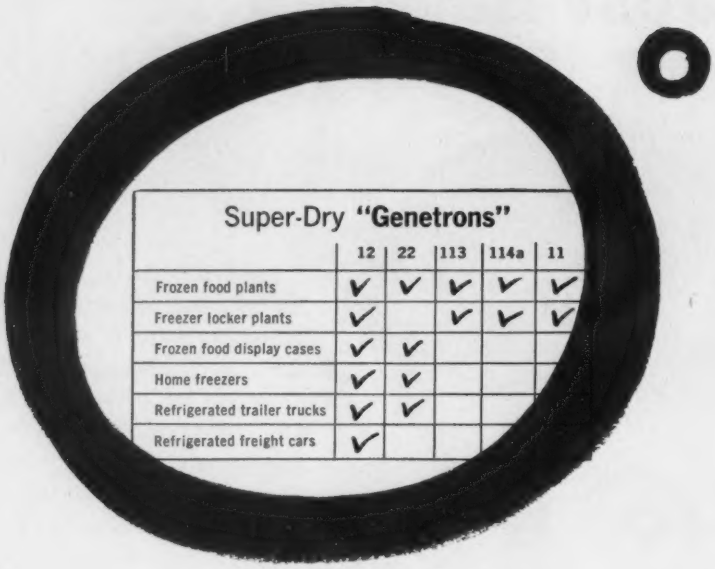
This is Riegel's business: The development and manufacture of packaging materials designed for **protection** . . . with emphasis on low cost, appearance, and high-speed machinability. More than 600 Riegel materials available . . . papers, foils, films, and combinations . . . waxed, coated, plain, or printed . . . as your products require. They can help win acceptance for your products. Write to Riegel Paper Corporation, 260 Madison Ave., New York 16.

Hershey's new and unique "Mint Chocolate" is protected by a special Riegel Pouchpak...printed on our new 8-color gravure...Heat-seal coated for high speed filling and forming on pillow-type packaging equipment.

Riegel

PROTECTIVE PACKAGING MATERIALS

CIRCLE 29 ON READER SERVICE CARD


Super-Dry "Genetrons"
12 22 113 114a 11
Frozen food plants ✓ ✓ ✓ ✓ ✓
Freezer locker plants ✓ ✓ ✓ ✓
Frozen food display cases ✓ ✓
Home freezers ✓ ✓
Refrigerated trailer trucks ✓ ✓
Refrigerated freight cars ✓

Zero in on Frozen Foods with genetron®

SUPER-DRY REFRIGERANTS

Ask any producer of frozen foods and he'll tell you. Actual zero temperature is *always* needed to maintain high quality and to protect product freshness. That's why, whether you package, store, ship or merchandise frozen foods, you need the sure protection of modern refrigeration equipment...and dependable "Genetron" fluorinated hydrocarbon refrigerants.

"Genetron" super-dry refrigerants are universally accepted for use as original or replacement charge in modern frozen food refrigeration systems. Leading equipment manufacturers approve them. Refrigeration engineers specify them. Wholesalers recommend them. Servicemen and contractors know they can depend on them. That's because "Genetrons" offer unexcelled purity and dryness . . . and their strict quality specifications are consistently *bettered* in production.

"Genetrons" are available from refrigeration and air-conditioning wholesalers from coast to coast. See your wholesaler. Insist on "Genetron"!

Quick Facts on "Genetron" Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content
- Noncorrosive to standard equipment materials, nontoxic, nonflammable, stable, safe
- Critical and freezing points well outside range of operating uses
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications

genetron 11 ORANGE LABEL CCl_3F TRICHLOROMONOFLUOROMETHANE
genetron 12 WHITE LABEL CCl_2F_2 DICHLORODIFLUOROMETHANE
genetron 22 GREEN LABEL $CHClF_2$ MONOCHLORODIFLUOROMETHANE
genetron 113 PURPLE LABEL $C_2Cl_3F_3$ TRICHLOROTRIFLUOROETHANE
genetron 114a BLUE LABEL $C_2Cl_2F_4$ DICHLOROTETRAFLUOROETHANE

Basic to America's Progress

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

B.F.Goodrich

Photo courtesy Farwest Fishermen, Inc., Anacortes, Wash

This belt cleans easily, resists oil, is easy on the eyes

B. F. Goodrich Highseal belt cuts maintenance costs, lasts longer

Problem: At the peak of the season, those women inspect up to 35,000 pounds of salmon an hour. An ordinary rubber belt was first used on this line, but fish oils soaked in, darkened the belt, left a fishy odor. No amount of cleaning could get out the smell, and the dark color made inspection difficult.

What was done: Then a B.F.Goodrich distributor recommended an improved conveyor belt, developed by B.F.Goodrich for handling foods where oil and grease is a problem. A special rubber compound gives the Highseal belt good resistance to most greases, fats and alkalies, moisture and food acids. It is light green in color, a shade selected by color experts as being easiest on the eyes for inspection service. It can take temperatures down to zero, up to 212 degrees.

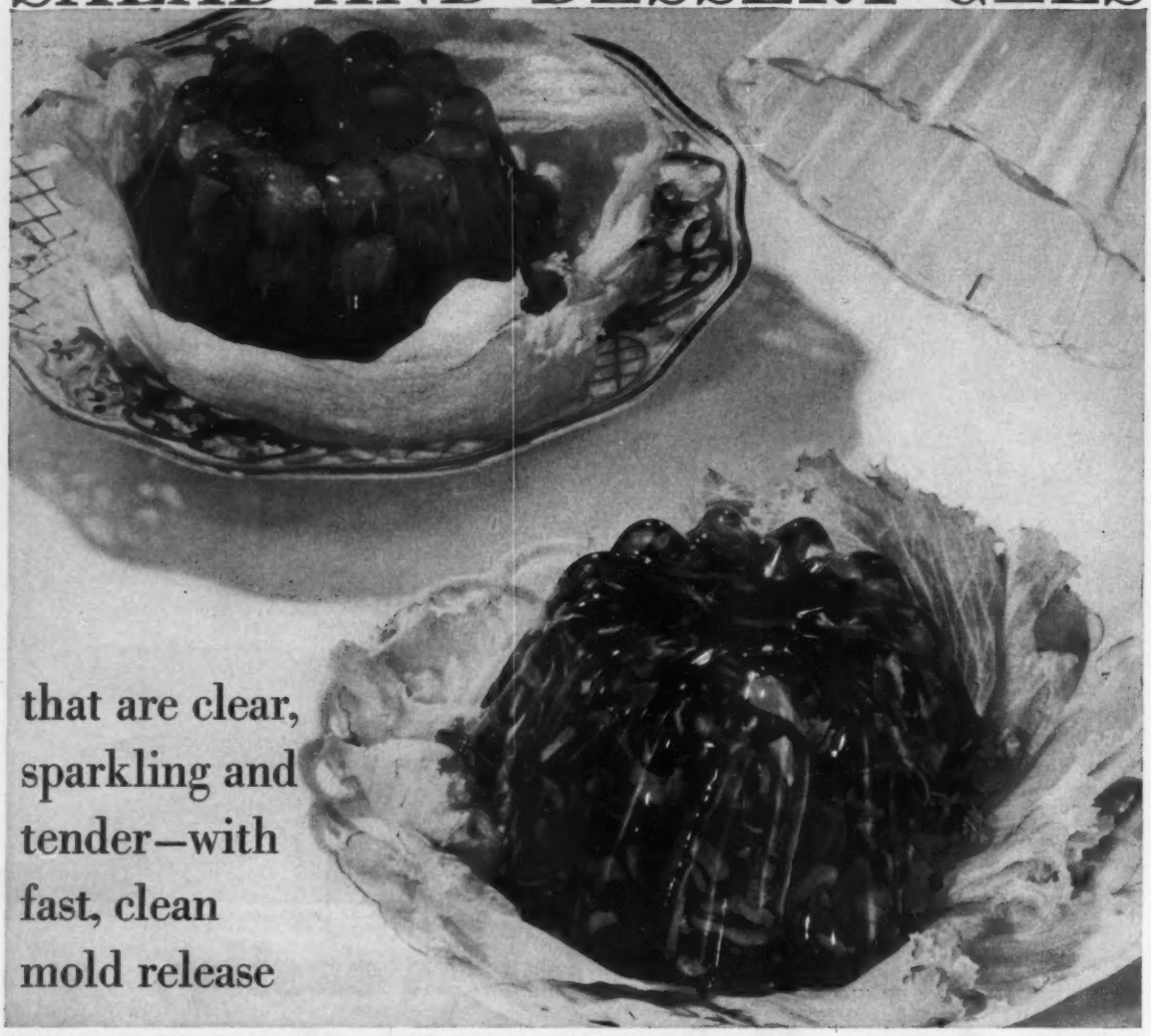
Savings: After three seasons, the Highseal belt has not shown the slightest amount of wear. The plant engineer also reports that the new belt holds lacing better, so there's less down time and maintenance is no longer a problem. Employees who work over the green belt find their job easier, more pleasant.

Extra benefits: Since food can't grind into its smooth, polished surface, this belt can be wiped clean with a damp cloth—no scrubbing or scouring needed. And because it is odorless, tasteless, non-toxic, there's no danger of the belt contaminating food.

Where to buy: Your B.F.Goodrich distributor has full information on this belt and can tell you about its many other advantages for food-handling operations. *B.F.Goodrich Industrial Products Company, Department M-664, Akron 18, Ohio.*

B.F.Goodrich *conveyor belts*

SALAD AND DESSERT GELS



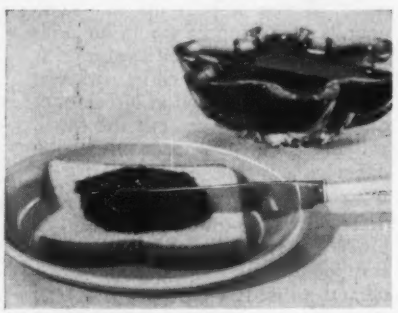
YOURS WITH KELCO-GEL HV

Made in three minutes and gelling in a half-hour or less, salad and dessert gels made with Kelco-Gel HV have superb body, excellent texture, and will not melt at room temperatures.

KELCO-GEL HV®
KELCO-GEL LV®
products of
KELCO COMPANY

120 Broadway, New York 5, N. Y.
20 N. Wacker Drive, Chicago 6, Illinois
530 W. Sixth St., Los Angeles 14, Calif.
Cable Address: Kelcoalgin—New York

Dietetic Puddings made with Kelco-Gel LV have smooth texture and firm body for added taste and eye appeal.



Taste Tempting Jellies are made with Kelco-Gel HV which imparts a softer body for better spreading, reduces syneresis in storage and in use.

Europe Offers Big Opportunity to US Food Firms

When an industry in one country becomes the most dynamic and successful of its type in the world, it logically looks for foreign markets to conquer.

That is the position of American food manufacturing today. With unequaled processing, packaging, and marketing know-how, with a host of new products and convenience items, and with high quality, our food industry has achieved the "impossible." It has upset Engel's Law, which holds that as consumer incomes rises, the percentage spent for food decreases.

In short, the industry has developed products and techniques with which to achieve phenomenal success in appealing to palates and pocketbooks.

This achievement, of course, is dependent to a great extent upon self-service stores, with their low margins and visual sales stimulation. It further is dependent upon consumer incomes and social trends which put a premium on quality and time-saving foods.

Conditions favorable in Europe

Equipped with the products and know-how to tackle new food frontiers, American food manufacturers should be—and some are—taking their business into new markets abroad. And Western Europe is the ripest of markets. People there have achieved the highest standard of living they have ever known, and they are spending more to eat better. Employment in industry is high, with a sizable percentage of homemakers holding jobs that leave them little time to prepare meals. Domestic help is scarce, forcing more women to do their own cooking. There is a sharp trend to self-service retail food stores.

But do Europeans like American style foods? The answer is "yes." This has been proved by the interest in U.S. Government-sponsored exhibits in several countries. Of course, some formulas should be tailored to traditional tastes. But as one travels, he realizes this fact: When a food or beverage is very much liked by people in one country, it also will be enjoyed by consumers in other parts of the world.

Yes, conditions are ripe for more American food firms to extend their frontier to Western Europe in a major way. Several leading manufacturers already have established plants over there, with notable success. Others are now going in. Several are exporting to that market. And some have licensed European food manufacturers to produce American items.

Integrated market is taking shape

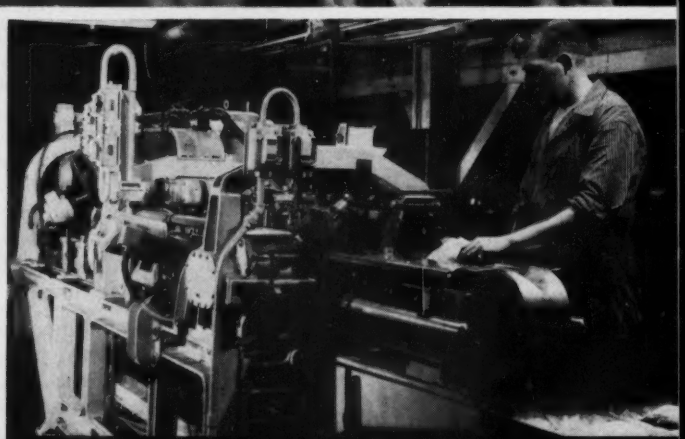
With the Common European Market shaping into a practical reality, a plant within that area can profit from lower internal tariff barriers. With the "outer seven" countries actively working for another integrated market in Europe, a second plant to serve that area makes good economic sense. Eventually, however, Western Europe likely will be one common market.

Now is the time to move into this new frontier. Leading European food plants are highly mechanized, and management is beginning to adopt our marketing methods.

Give them 5 to 10 years, and the European food market will be theirs.

P.S.—For report on European food trends, see article on page 39. It highlights proceedings of 4th International Congress on Food Distribution, held recently in Lausanne, Switzerland.

STAINLESS STEEL MEANS CLEANABILITY



REPUBLIC TITANIUM means maximum resistance to and protection against the corrosive action of salt and brine. Titanium is impervious to the pitting action and corrosive effect of salt water and brine used in fish, meat, and food processing operations. Equipment fabricated from Republic Titanium is lightweight and easy to handle. It's easy to clean, too. Write us for more facts on how you can use this remarkable metal in your operations.

Easy, rapid, thorough, and economical cleaning are standout features of food processing equipment fabricated from Republic ENDURO® Stainless Steel.

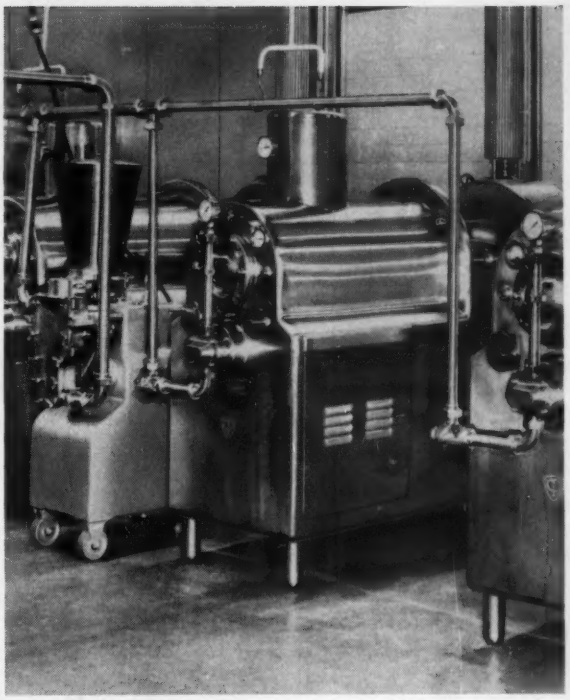
Downtime between processing operations is held to a minimum because stainless steel is so easy to clean and keep clean. The need for costly scrubbing compounds is eliminated. Usually a simple washing with soap and water rids the equipment of all residue and readies it for the next operation.

Because stainless steel's surface is smooth, hard, and dense, there is little opportunity for contaminants or bacteria to gain a foothold. Corrosion caused by food acids and moisture is locked out.

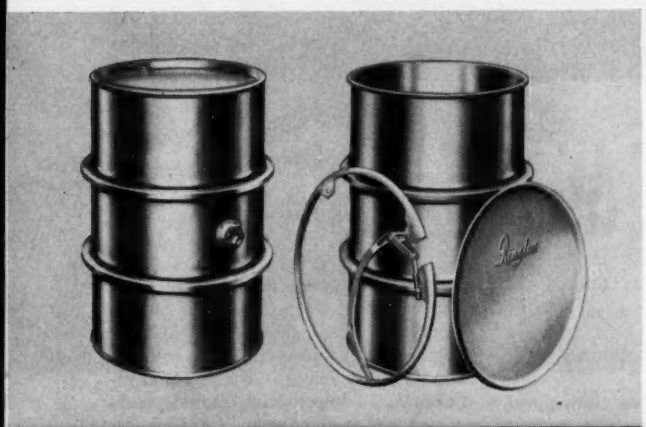
Radioisotope tests conducted at the University of Michigan on bacteria removal, proved stainless steel to have cleanability equal to china, glass, and plastic – superior to aluminum.

For immediate savings in cleaning and maintenance costs, for long-range savings in extended equipment life, contact your supplier about food processing equipment fabricated from Republic Stainless Steel.

This example of the advantages of stainless steel is brought to you by Republic Steel in behalf of the stainless steel equipment manufacturers and stainless steel service centers.



REPUBLIC ELECTRUNITE® STAINLESS STEEL TUBING means major savings in sanitary tubing applications. Outstanding corrosion-resistance and a wide range of resistance to temperature, pressure, and physical damage assures you ELECTRUNITE will last indefinitely. Every foot is uniform in wall thickness, of uniform diameter, and meets every requirement called for by ASTM or ASME specifications. Available in bright annealed finish or with O.D. polished, I.D. polished, or both, in a complete range of sizes. Also available in schedules 5S, 10S, and 40S pipe sizes. Contact your ELECTRUNITE representative, or mail the coupon for details.



REPUBLIC STAINLESS STEEL DRUMS mean maximum protection against corrosion and contamination for your packaged goods. Stainless drums never need painting. Withstand hard use and abuse. Available in 55- and 30-gallon sizes, double seamed, or all-welded construction with either I-bar or pressed-out rolling hoops. Meet ICC specifications. Mail coupon for full facts.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

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Send more information on:

☐ Stainless Steel ☐ Stainless Steel Drums
☐ ELECTRUNITE Stainless Steel Tubing ☐ Titanium

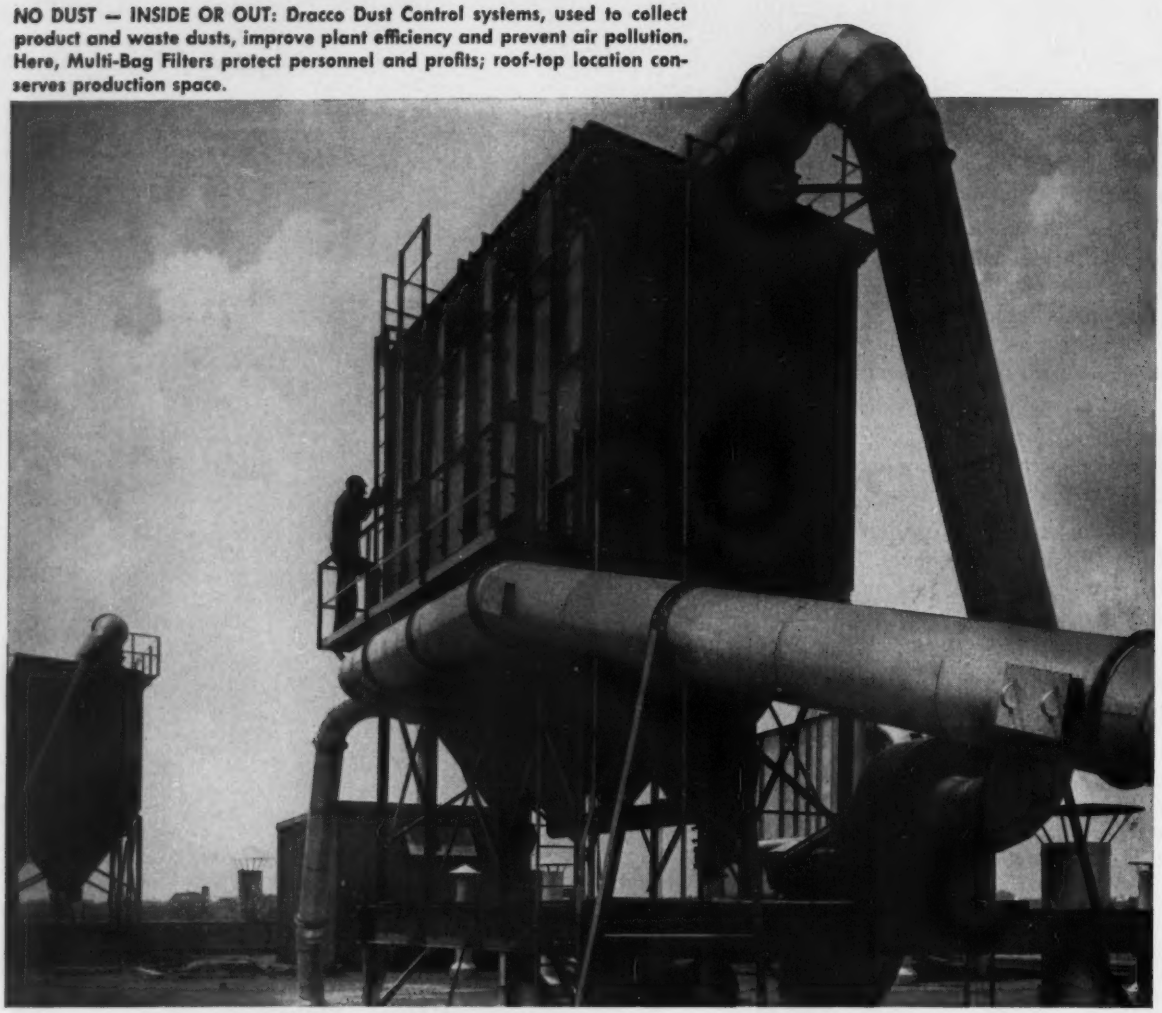
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

NO DUST — INSIDE OR OUT: Dracco Dust Control systems, used to collect product and waste dusts, improve plant efficiency and prevent air pollution. Here, Multi-Bag Filters protect personnel and profits; roof-top location conserves production space.



specify Dracco . . . and forget that dust problem

Dust will cease to be a problem, inside or outside your plant, with Dracco Dust Control Equipment on the job. First of all, Dracco Filters trap the dust at its source before it can become a problem. Then, they collect it efficiently and exhaust only clean air with no visible dust. Finally, they keep doing this year after year with only routine preventive maintenance.

This dependability is built into Dracco equipment through—

simplified design—minimum moving parts, standard components, all parts readily accessible and easy-to-change filter bags assure lowest maintenance cost.

custom engineering—each Dracco system is fitted to exact job requirements for maximum efficiency.

proved techniques—Dracco cloth-filtration techniques, perfected over the last 40 years, assure the highest collection efficiencies.

accurate fabrication—heavy-gauge metal and quality materials are skillfully converted into rugged units which provide an extra-long service life.

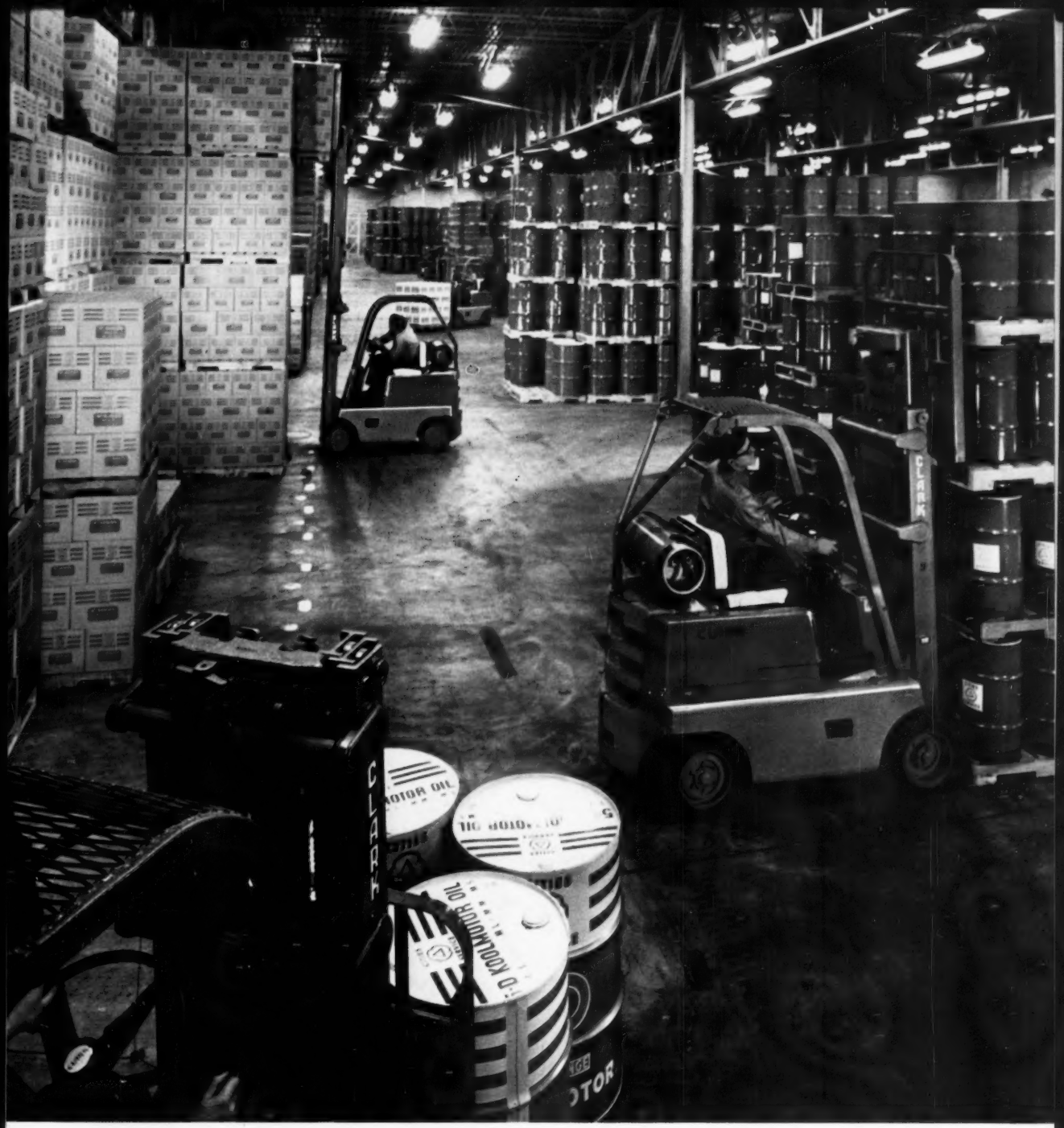
Solving dust and fume problems is a Dracco specialty . . . and has been for over 40 years. This experience can be combined with that of your plant engineering staff to give you better working conditions . . . improved manpower efficiency . . . lower plant cleaning costs . . . reduced machine wear . . . elimination of air pollution. If dust is your problem, you can unload your worries by contacting Dracco today.

DRACCO DIVISION OF FULLER CO.
4045 East 116th Street · Cleveland 5, Ohio

Complete 40-page catalog on Dracco Dust Control Equipment contains detailed data and valuable reference material. Write for Bulletin 800.

DRACCO *airstream* conveyors
dust control equipment

CIRCLE 37 ON READER SERVICE CARD→



You're paying for new trucks...why not own them?

Times change. So does equipment efficiency. The new *Clarklift* fork trucks pictured above, for example, have been tested and proved to be 30% more efficient than the average truck in use today. Over four years of designing, testing, and field-proving has demonstrated time and again that *Clarklift* owners get a fast return on their investment in extra production alone.

And, of course, if you have old equipment, there's the high cost of maintenance to consider. If your present trucks are frequently down for repairs, you're paying dollars not only for the parts and labor involved, but you're also paying for lost production, supply and shipping bottlenecks, poor use of manpower. It all adds up. It means you're paying for new equipment every day . . . *but without owning it.*

A planned equipment replacement program is worth investigating. Simply write: Planned Replacement, Clark Equipment Company, Battle Creek, Michigan. We'll arrange to have a representative call to survey your operation and explain the various programs available.

CLARK® EQUIPMENT

CLARKLIFT is a trademark of Clark Equipment Company

Staley Quality Improvement Pointers:

in flavor, body, color, profits...

Sweetose makes the difference! Here's why!

In combination fruit juice drinks, Sweetose blends and enhances the natural flavors and colors of fruits.

In canned fruit sauces, Sweetose holds appetizing natural color. Enhances that just-picked flavor with balanced sweetness.

Sweetose, the original enzyme-converted corn syrup, brings out true fruit flavor . . . gives a brighter, richer, more appetizing appearance that wins sales!

Whether you pack jams and jellies, fruit juice drinks, or fruits and berries, remember this: bland, crystal-clear Sweetose Corn Syrup gives balanced sweetness control—never masks a flavor no matter how delicate.

Strawberries taste like real strawberries, grapes like real grapes, peaches like real peaches, for Sweetose holds natural "fresh-picked" flavor! Captures true fruit colors at their peak. Improves appearance, body and texture in a wide variety of fruit products.

Look into the many advantages of Sweetose today. For more information on how Sweetose can impart customer-winning characteristics to your products at *definitely lower sweetener costs*, see your Staley Representative at the branch office nearest you, or write:

A. E. STALEY MFG. CO., DECATUR, ILLINOIS

Branch Offices: Atlanta • Boston • Chicago • Cleveland
Kansas City • New York • Philadelphia • San Francisco • St. Louis

Sweetose®
THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

HAPPY SWISS HOMEMAKERS leave exhibit of American foods at Lausanne. These lucky ladies won U. S. cooked turkeys as door prizes at special luncheon for housewives. All guests were given U. S. foods to test. Reactions were overwhelmingly favorable.

In Europe FE Editor Sees

New Frontier for U.S. Foods

Higher incomes, demand for quality and convenience items, and sharp rise in self-service stores open big potential market for American manufacturers

FE Reports on Europe—
Part I: Lausanne Congress

REVOLUTIONARY food trends in Western Europe were sharply defined at the 4th International Congress on Food Distribution held in Lausanne, Switzerland, June 22-26.

The trends are paralleling those in the United States but with a time lag of perhaps 10 years.

Consumers are spending more for quality and convenience foods.

FRANK K. LAWLER

Editor, "Food Engineering"

He attended International Food Congress and investigated food trends and manufacturing in six countries of Western Europe.

There is a relentless move to self-service food stores, with corresponding progress in packaging. Supermarkets are coming into the picture slowly but successfully. Consumer incomes are up, and people are spending a high percentage of their pay to eat better.

Consumers and distributors alike were keenly interested in the modern foods and marketing methods displayed at the International Food Exhibition held in Lausanne in conjunction with the congress. Significantly, American convenience foods made a big hit with consumers attending the Exhibition. Quick-frozen dinners, time-saving mixes, and quick-and-easy canned and preserved foods were eyed with enthusiasm. Furthermore, Swiss homemakers were given samples of American foods to test, with a questionnaire on which to report their reactions. They overwhelmingly endorsed U. S. products.

More Purchasing Power

Dynamic trends pointed up in reports made at the International Congress explain this interest and reveal opportunities for American food manufacturers.

B. P. Borgers, of Germany, cited several pertinent factors:

FOOD ENGINEERING
FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

The standard of living is rising rapidly, and its influence is felt in three directions. The demand for improved quality has made itself felt everywhere. Consumption of bulky, heavy foods is on the decline, and the sale of healthier foods is increasing. For example, annual consumption of tropical fruit (mainly citrus) in the German Federal Republic was 7.5 kg. in '55-56, compared to only 5.7 kg. in '35-38.

Technical development is continually improving methods of obtaining and preserving food. New and more varied kinds of canned foods are produced. Scientific progress is leading to the introduction of quite new products.

There is a steady decrease in domestic help, and this involves an equally steady increase in the pretreatment of food for quicker and simpler cooking. And to satisfy the new wants of consumers, a comprehensive assortment of foods must be offered in retail stores.

Growth of New Food Lines

Great changes are taking place in food stores, according to J. Battard, of Belgium. In Europe, most of the stores still are small, often having less than 220 sq. ft., and American type supermarkets are not very numerous. But there is a tendency for the small shops to disappear at an increasingly rapid rate. Also there is a trend of store expansion and modernization. And with increase in size goes effective display of a wider range of products.

The change has obviously affected all methods of food distribution. There has been a complete overhaul of chain stores, which have done everything in their power to increase their sales area. And they use more

Also see Editorial, p. 33

modern fixtures for effective display of many articles which previously were unknown to the general public. This has led to an increase in sales and consumption, not only of the new lines but also of traditional articles.

Imitating the big chain, the independent store has followed the same trend. And department stores are developing their food departments, very often making them one of the most attractive features of the store.

Sales of Many Foods Rise

Considerable difference exists in trends, but in general sales of the following products are expanding:

APPETIZING U. S. food products in a wide variety of types and brands appealed to the young as well as the old at Swiss exhibit sponsored by U. S. Department of Agriculture, in cooperation with American food manufacturers who supplied products.

Confectionery, biscuits, canned goods, beer, mineral water, soft drinks, wine, fresh fruits and vegetables, fresh meat, sausages, poultry, bakery products, milk, butter, eggs, and cheese.

Sales of dietetic products, fresh and frozen fish, and frozen fruits and vegetables have tended to decline.

There is, therefore, a trend to increasing sales of almost all non-perishable processed products. And sales are increasing in proportion to the efforts of manufacturers to improve their products.

Confectionery and biscuits in particular are increasing in sales as a result of prepackaging in small packets designed to suit consumers who appreciate freshness, good quality, and convenience. And there are many new products to meet the demand for novelties.

Canned foods continue to gain for two reasons. First, the housewife wants products that simplify her cooking. Secondly, manufacturers have constantly been improving quality to make their products more and more resemble the fresh items.

Precooked dishes are very popular in all countries. New products are continually being put on the market, notably in the field of canned meats.

Demand for beer, soft drinks, and mineral water is growing in many countries because of the higher standard of living and new ways of life. People are staying at home more to watch television and are consuming at home more and more of the special beers which formerly were unknown in certain countries. And the same is true of soft drinks.

Even in France, where the consumption of cheap wines has always been high, the demand for beer, mineral water, and lemonade is increasing each year. More and more different types of canned or bottled fruit juices and syrups also are meeting with great success among the younger population. The sale of wines is increasing in most countries, as consumption of spirits declines.

Milk is very popular with the younger people, and there is considerable increase in the sale of pasteurized and sterilized milk. Milk is delivered exclusively in bottles or paper containers. Consumption of evaporated milk is dropping in most countries.

Fresh fruits and vegetables no longer are a luxury, and are sold at all times of the year at prices within the means of most. And sales of exotic fruits are gaining, thanks to the speed and ease of import and to progress in refrigeration.

Sales of delicatessen are rapidly rising as a result of industrial production, the quality, number of new items, and the consumers desire for conveniences.

Poultry no longer is a luxury. Large scale breeding has reduced prices, and sometimes the sale of poultry in food stores reaches considerable proportions. But fresh meat still is sold but little in food stores.

Dairy products sales are gaining as the result of better refrigeration equipment to preserve them. And eggs are helped by packing in small cartons containing a half dozen.

The picture for frozen foods is not so good. Except for the Scandinavian countries, where fresh vegetables are scarce during a large part of the year, the demand for frozen foods declined for a time in Europe. And these items have not even been introduced in all regions. An important reason for this lack of popularity is the break in the "cold

QUICK AND EASY American foods attracted continuous crowd of appreciative housewives at demonstration kitchen in U. S. food exhibit. There is no doubt that women in Switzerland and other Western European countries want such products.

chain," or lack of proper refrigeration facilities from factory to home. Refrigeration often is nonexistent in homes. Another factor has been high prices relative to the cost of fresh vegetables.

More and more manufactures are supplying almost all of the traditional food products in packages or packets designed specifically for sale to the consumer.

Self-Service Gains Fast

The trend from specialized to general self-service food stores is motivated by more efficient operation and speedy service to customers. And self-service favors visual sales of articles on display.

First introduced in Europe in 1947, self-service stores increased slowly to 6,000 at the end of 1954, and then shot up to 16,000 in the next three years.

The average area of stores has risen from 360 sq. ft. to 880 sq. ft. An area of 1,100 sq. ft. is found in self-service units, and supermarkets have 22,000 sq. ft.

Another trend in Europe's food marketing is the development of voluntary groups within the wholesale trade. Retailers are grouping under the banner of one wholesaler or group of wholesalers to benefit from the good name and reputation for reliability of a common brand. The isolation of retailers is giving way to the powerful voluntary chain, which gives assistance in the selection of new products, in advertising, and in the conversion of stores. Food companies doing both wholesaling and retailing are creating new distribution depots designed to reduce costs.

Data on Britain's Premier Supermarkets, Ltd., were given in a report by Mrs. Ch. Billard, of France. There are 18 supers in the English chain with a total turnover of 5 million lb. a year.

Expenditure for Food High

European consumer expenditures for food are high, according to a report by M. David, J-G. Oubradous and R. F. Werner, of France. A Frenchman spends 42% of his income in food stores, compared to 27% for an American, 36% for a Belgian, 47% for a German, and 54% for an Italian.

Because the percentage income spent on food generally is higher when total income is low, per capita food expenditure differs only slightly from one group to another in the same country—and even from one country to another.

It is not true that the individual's power of purchasing foods is much greater among Americans than among the people of Western Europe. Total purchasing power is greater in the U. S., but Europeans spend less on non-food items.

American Food Man's Views

Relation of European trends to America were highlighted by Paul S. Willis, president of Grocery Manufacturers of America.

Real per capita consumer incomes have increased substantially in most European countries. This indicates larger potential markets in Europe for U. S. manufactured foods, as well as more opportunity for foreign countries to export food to the U. S.

Today, the U.S. is importing about $3 billion of food annually, a value 50% greater than in 1946-50. We are exporting $2.5 billion in food, 20% more than in '46-50.

A number of imported food items now are sold in supermarkets throughout the country.

Conversely, U.S. foods are experiencing a rising sales volume in other nations.

In Sweden, food expenditures have more than kept pace with rising total consumption expenditures, as in the U. S. Food spending continues to represent about 42%, slightly more than in '48, or even pre-war.

In both Sweden and Switzerland a large number of new food products have been made available in food stores since the war. These include packaged ready to serve foods, partially prepared items, and ingredients. The list of new products is much like that in the U.S. —cake mixes, baby foods, frozen foods, frozen juices, canned foods, prepared meals, frozen fish fillets, oven-ready poultry, ready-made dough, prewashed and packaged produce, and a large quantity of soups.

While such products have increased in both countries, progress apparently has been the more rapid in Sweden. There sales of frozen foods rose from 400 long tons in '47 to 12,500 in '57; cake mixes from 400 long tons to 5,000 in the same period. Comparable figures are not available for Switzerland, but convenience items are gaining. At the same time imports of fresh fruits and vegetables are increasing.

Both countries make some of their conveniece foods, and import some. One Swiss firm has developed more than 50 new canned items since 1946.

How Does It Add Up?

It seems that in Western Europe today there are many of the same basic conditions for expansion of the food industry which existed in the U. S. in the past 20 years, Mr. Willis observed.

Incomes are rising, consumers are learning to upgrade their diets, domestic servants are disappearing, and housewives seek relief from kitchen chores. Convenient new and improved foods are being developed and vigorously promoted to tempt the buyer, the self-service method of distribution with its economies and sales stimulation, is spreading. Furthermore, the experience of a nation like Sweden indicates that the food budget can be expanded as incomes rise, as it has been in the U. S. —*End*

RETAILERS' OWN BRANDS are taking up more and more shelf space in stores. Further, house brands are being made more attractive to consumer by expansion over a wider variety of items (especially convenience-type products) and more appealing packaging. Top-rank A&P is said to give one out of four shelf facings to its own labels.

FE Industry Analysis:

Power Play at Retail Level Tightens

Big-volume buyer calls shots in "battle of brands"—from selection of better-profit items for his own house labels to purchasing methods that sweat down seller's prices to uneconomic levels . . . Hardest hit are firms with limited brand distribution

HAS PHENOMENAL GROWTH of centralized power at retail level become an economic booby-trap for the food manufacturer?

In the industry's new "balance of power" complex that is being shaped by competitive forces, food firms see themselves maneuvered into a vulnerable position where their economic success is to a large degree dependent upon major chains. Most defenseless in this respect are companies lacking a brand franchise.

In the marketing "cold war" now embroiling the industry, there are four major forces: (1) Big-ticket national brands, (2) smaller regional packers, (3) private labels, and (4) a growing number of custom packers. It is the sharp growth of the private labels that, in the opinion of many, makes the chains' growing economic power a serious challenge to manufacturers' marketing programs.

Reason for this is that the PL, an old standby in the food field, has been recast into a new weapon—an economic sword that can either sever a manufacturer's distribution life-line or slash f.o.b. prices.

Historically, PLs have enjoyed their greatest vogue during times of economic distress—such as the early '30s, when they answered a need for low-priced goods to accommodate depressed purchasing power. But, the fact that their more recent acceleration has come during a period of rising personal income makes them a far more serious challenge.

To get a better understanding of how manufacturers are jeopardized by this revolutionary transition of the PL you have to go back to the trends that set the scene.

How Power Shifted

At one time, the retail field offered the food marketer two distinct approaches: He could concentrate either on the independents or the chain stores. In effect, he could gain distribution through one type of outlet and, by creating consumer demand for his brand, force the other store-type to stock his line.

When the self-service idea came along, shifting the emphasis to preselling and fast turnover, brand advertisers had a clear shot at consumer targets. Volume-minded retailers were more than willing to stock the pre-advertised goods that pulled in the traffic.

So powerful was this brand merchandising that it forced independent wholesalers, voluntaries, and cooperatives to shy off from their own private labels. Now, to compete with the chains, these groups had to feature the sales-generating known brands.

Nursed along by the tremendous expenditures in brand marketing, the self-service store flourished. And, with store operators and manufacturers working for the same objective—mass volume—retail cooperation with marketers' programs was efficient and thorough.

MERGERS AND ACQUISITIONS, fueled by fierce competition at retail level, helped top 10 chains increase their share of food store volume from 22.2% in '48 to 26.8% in '58. Furthermore, 13 biggest chains, with only 5% of total stores, did one-third of business last year.

Vise on Manufacturers

To further strengthen their national promotions, manufacturers sought close tie-ins with the chains' local advertising. The theme of national merchandising was food quality and uses; that of retail cooperative advertising, quality, and price. Thus, marketing pulled shoppers into the store, while retailers' merchandising brought goods to the consumers.

In the heyday that brand marketers came to enjoy, few of them ever dreamed that the modern, self-service supermarket they had done so much to create—through pre-sold merchandise, and impulse-sale packaging—would in time become a Frankenstein creation imperiling their freedom of distribution. For, ironically, the bounty-laden shopper, her shopping bag crammed with all sorts of wondrous products, came to look upon the chain store, as well as the brand advertiser, as the source of her blessings.

Quick to recognize this divided loyalty, the chains capitalized on it—by pushing house brands, opening new stores in strategic shopping areas, gobbling up competition, and upgrading their own marketing programs. Now, with the great bulk of food distribution centered largely in the supermarket chains, the brand marketer's choice of alternatives is curbed.

Here's how J. Walter Thompson's Arno Johnson spells out this concentration: "In 1957, 29,000 supermarkets with total sales of $31.1 billion had a greater total volume of business than all the 394,000 grocery stores in existence in 1951—only 6 yr. earlier. Representing only 10% of the stores today, the supermarkets have 67% of the volume of sales."

And, he goes on, the story is the same for the independent stores, who are forming their own power groups by affiliating with voluntary and cooperative groups. There, the unaffiliated independents' share-of-volume dropped from 31% in '50 to 18% in '57.

Just how far this concentration of buying, in fewer and stronger hands, has gone is soundly documented in two recent studies—a 4-yr. analysis, "The Merger Movement in Retail Food Distribution," by National Assn. of Retail Grocers, and the Federal Trade Commission's interim report, "Economic Inquiry Into Food Marketing."

The NARGUS study, covering 160 acquisitions by 68 companies, shows that 2,657 stores with estimated annual sales (at time of purchase) of $2,824,830,000, were absorbed in "a flood tide of merger activity from 1955 to 1958."

Acceleration of the merger tempo in recent years is stressed by FTC. Says that agency: "Nearly three-fourths of the acquisitions of retail stores by chains have taken place in the last 4 yr. From 1949 through 1958, chains made 315 acquisitions, involving 2,238 stores.

"Of these, 65 acquisitions with 560 stores occurred in the first 6 yr., and 250 acquisitions with 1,679 stores in the last 4 yr. Responsible for most of these were 10 chains which acquired 1,474 stores."

In the '53-'58 period, the $6.6 billion gain in chain store sales is accounted for thusly: $1.4 billion by stores in operation in '53, $3.9 billion by new stores, and $1.3 billion by stores acquired after '53.

In '58, when chains (11 or more stores) grabbed off 37% of total food store sales, the 15 largest chains accounted for 29.7%, and the 4 leaders (A&P, Safeway, Kroger, and American Stores) for 19.7%.

Given the fierce corporate competition that prevails among food distributors, some can see no visible let-up in this power centralization trend.

A pithy example: The "Wall Street Journal" asked the president of a Los Angeles chain what would happen if A&P invaded the western half of the country. His answer: "It would force a lot of consolidations among the 30-odd smallish chains here that are now battling it out. Probably four big chains would emerge, with a few smaller ones left on the fringe."

Two-Edged Sword

The economic power produced by this merger-concentration complex is felt on many fronts.

Of special significance to manufacturers is how this power play (1) underwrites PL growth and (2) fosters uneconomic buying methods.

Two main reasons are given by today's PL promoters: (1) Higher profits to bolster shrinking retail margins on known (and price-footballed) brands, and (2) a means of individual competition not possible with broadly distributed brands. While essentially valid, these reasons disclose but one aspect of the economic conditions behind the PL movement. (*Turn page*)

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Holding the balance of power, chain buyers subtly demand the right to purchase any products they choose from most manufacturers. They carefully select the items, have them packed to their grade/quality specs, and demand a stripped-down price irrespective of manufacturing, R&D, packaging, and previous marketing costs.

Most products selected for house brands are those with rapid turnover and good profit margins—the very bread-and-butter items the manufacturer depends on for his production and sales volume. And while PL business lacks economic security, and has an extremely low-profit margin, the volume is such that few manufacturers pass it up.

'Set-aside' buying methods (more on this later) extend into PL procurement. Not only do they frequently affect prices, but they also bring other gains to buyers at the manufacturers' expense. Because these tentative orders wait in a manufacturer's warehouse, buyers are spared the capital costs of large warehouses, or storage costs in public facilities.

As to the use of cooperative advertising funds by big buyers, the NARGUS' study has this to say: "Some distributors are able to finance their advertising costs in large market areas from cooperative advertising payments paid by manufacturers with a sizable sum left over." The difference between national and retail newspaper rates leaves a monetary surplus that may be used to operate a buyer's advertising department—or to finance PL promotion.

A principal effect of the PL competition is pinpointed by the marketing v. p. of a large cannery. Says he: "Presently, my marketing problems are regional, even local. Our national program still functions efficiently and economically."

That's because the market make-up has transitioned from "suburbia" to "interurbia." This new concept is most graphically illustrated in the evolution of New York City.

There, as elsewhere, it's no longer realistic to speak of a city and its suburbs. For this market is virtually one 600-mile "city" extending from Maine to Virginia. And while this "interurbia" comprises less than 4% of the Nation's land area, it represents 21% of the population, and 24% of retail sales.

In these new population centers, where variety of goods becomes "the spice of buying," consumers are exposed to brands they've never seen before.

"There's no such thing as brand loyalty," bluntly comments a marketing v. p. in recognition of this trend. "It's an exploded theory. However, a brand advertiser can develop and maintain brand recognition."

But, mere recognition is far from being an impulse to buy. In fact, there are other forces (overt and subtle) working against mere "brand recognition." Of these, the one causing most consternation is the broad retail control of merchandising at point-of-purchase.

Retail giants can deny a national brand equitable display space, or give house labels favorable shelf position. They can mark up a manufacturer's brand to an exorbitant level which, when compared to the low price of their own PL, hampers the sale of the known brand.

One canned food marketing v. p. explains: "As long as our product has equal facings, and the spread between the PL and ours is 2¢—we can easily compete. At 3¢ it becomes tough. Above this, we're dead."

'Bid and Shut' Ethics

At the buying level, too, this new balance of power puts severe pressures on the manufacturer. A typical example is the method used by one chain in purchasing weekly meat supplies for a large marketing area.

Each week this chain offers its requirements to local packers for bids. And, because of the large quantity involved, the winning (and necessarily lowest) bid sets the going price for all meat in the area.

This same yardstick applies to other food products where manufacturers make offerings (which are essentially bids) to big buyers. And, as in the bid method, purchases are ordinarily made on the basis of the lowest price offered.

However, manufacturers, for competitive and other reasons, seldom make public these prices. In some instances, this reticence is understandable. Nevertheless, it eventually rebounds, sometimes, to the seller's disfavor—for it places his contemporaries at a disadvantage and opens the way for buyers to manipulate prices.

In an obvious demonstration of buying power, one of the largest chains forced the aforementioned 'set-aside', or 'reserve' agreement method of buying on manufacturers about three years ago. Now, practically all chains employ it whenever possible. It is in general use for purchases of canned and frozen products, except for buying specs on labeling and casing of products.

This method literally pulls the economic rug from under manufacturers, because it shifts the entire financial responsibility and business risk of food processing to the manufacturer's shoulders.

Reduced to its simplest terms, a set-aside merely states a buyer's requirements and 'agreement' to order-out this merchandise when/as/if needed, and at the going-price at time of delivery.

Who makes the final decision as to what is the going, or legitimate, price at time of shipment? Of course, the buyer usually has the upper hand in this decision.

How does he go about this? Largely by quoting a price comparison from other current offerings.

Since there is no firm contract, a buyer can refuse delivery if the seller does not come very close to the lowest going price. Thus, the manufacturer is reduced to selling at the buyer's price.

Sellers get some protection from cut-back clauses that specify time periods when, if a buyer has not ordered out his set-aside purchase, the packer may deduct a percentage of the order and put it on the open market. However, because manufacturers want this volume business, many of them, especially smaller

Why This Report?

This special report is prepared from a study by FOOD ENGINEERING's editorial and market research staffs. Carried out over the past several months, it is based on personal contacts with management and marketing executives of the following types of firms: Food manufacturers, chains and supermarket organizations, voluntaries, retailer-owned cooperatives, independent grocers, banks, and advertising agencies.

In all fairness, the editors stress, the newly-gained power discussed here is not used irresponsibly by all retail distributors. For there are many who have tempered their strength with the ethics of modern business. Rather, this analysis is concerned with the minority who may, like Gresham's law, drive out their more responsible counterparts if their power is not offset.

companies, hesitate to invoke the clause for fear of disturbing relations with chains.

"We have operated under this method for over three years," explains the sales manager of a big canned food firm, "and have forgotten entirely about the old traditional sales contract. We protect ourselves by rigidly enforcing the cut-back clause.

"The cut-back dates closely follow the end of the packing season. Thus, if a buyer does not order-out his merchandise, we have a fair opportunity to sell it elsewhere."

Other firms are not so fortunate. For example, take seasonal packs where manufacturing economics demand mass production.

In a relatively short period of time, a packer must process tons of raw materials (purchased on firm contracts from growers) to supply set-aside orders placed by buyers of large blocks of goods. On this basis, the manufacturer essentially custom-packs for big buyers.

However, the buyer can. without penalty, cancel the order if, for example, he finds: (a) That the order exceeds his needs, (b) that he can purchase the same product at a lower price from another source, or (c) that he has by error (or intent) duplicated this order with another manufacturer.

If this occurs early in the season, the manufacturer may be able to sell this block of merchandise. But if it happens late in a season, he may be forced to sell at distress prices.

In most other businesses today, the delivery and payment for a custom-made order, such as this, is mandatory. Thus, because the set-aside agreement lacks the force of a legal contract, a buyer may resort to price manipulation, reduce a manufacturer's status to that of a warehouseman, practically eliminate a seller's bargaining power, and, finally, wipe out any legal buyer-seller relationship.

One could argue that the traditional sales contract, which specified price, quantity, and delivery dates, was not always enforced. Yet it did provide a commercial guarantee which the manufacturer used as a basis for contracting with growers, carrying out financial transactions with the bank, and setting delivery and payment dates.

Some PL purchases, especially frozen foods that must be labelled and cased before storage, are still made on a firm contract basis. Most canned fruit and vegetable orders are set-aside—stored bright, then labelled and cased when ordered out.

Some chains have not relied upon buying power exclusively to push the growth of house brands. Vertical expansion into processing is on the increase.

FTC's interim report puts chains' total manufacturing volume at $1.3 billion in '58 (and that of voluntaries and cooperatives at $16 million and $13 million, respectively). The chains' output was 21% greater than in '54.

So far, the chains have carefully limited the items they process to those made of raw materials that permit easy control of finished product quality and grade. Dairy, bakery products, coffee, and a long list of formulated foods, are among the leaders here.

Few retail organizations manufacture products of raw materials that must be separated into several grades, or those that are ordinarily sold to multiple markets—for example, canned or frozen fruits and vegetables. Their PL requirements are usually confined to one grade. And, since these products are also sold to institutions and re-manufacturers, they require marketing methods and personnel not employed by the chains.

No matter what the product, marketing methods of a number of chains seem slanted to eventual replacement of a large share of known brands with PL items. And, the only recourse the manufacturer has is to redouble his marketing efforts.

There is, of course, a break-even point beyond which increasing marketing costs place a manufacturer's product at a disadvantage to competitive brands and chains' PLs. This is especially true when regional or local price wars flare up. However, national distributors balance per-unit marketing expenditures by minimizing relatively big costs in some area with smaller budgets in others.

A few manufacturers have countered the challenge by buying retail stores through which they sell part of their production. The advisability and wisdom of this course varies with each company.

Such a step can alienate competitive chains in the area where the manufacturer's retail outlets are located. And, it being impossible for the manufacturer to extend these holdings by merger-acquisition methods, chains in other areas might look on this venture as a threat.

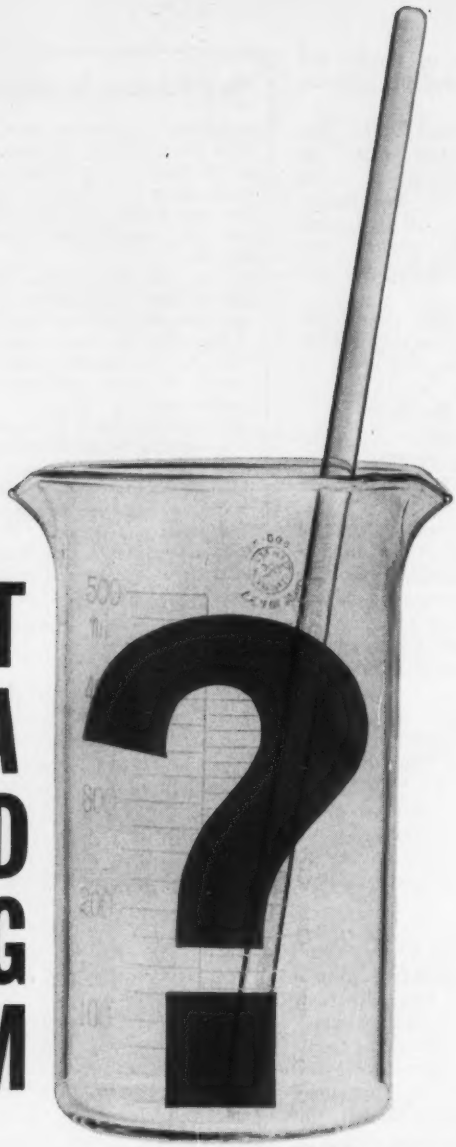
Presently, the most alarming results of this brand of warfare, and its complexity of economic pressures, are the effects on that large segment of the food industry now forced to devote the bulk of its output to PL.

Obviously, the PL buyers want to keep these manufacturers in business as their sources of supply. "But, just barely in business," say more than one canner and freezer wryly, "so we are in a financial position where we must sell these big buyers at nearly any price to maintain manufacturing production on a solvent basis."—*FE Staff*

How manufacturers can counter the PL threat will be discussed in a coming issue of FE.

Key Factors in Marketing Crisis Facing Food Firms

- **Balance of power at retail level continues its seeming inexorable shift into the hands of chains. During the past four years, by a series of unrestrained mergers and acquisitions, it continues to snowball.**
- **At the very threshold of a promised 60% food-market expansion in the next decade, this shift of power threatens to limit, if not actually subjugate, manufacturers' marketing plans to the wishes of large-volume buyers.**
- **The economic existence of some branches of the industry is weakened by the arbitrary manipulation of "set-aside" buying, as well as the demoralizing selection of "legitimate" prices based on "time of delivery".**
- **Marketing freedom for many manufacturers pivots on which way the chains turn the merchandising valve. If the valve is open, advertising functions efficiently. If closed, greatly increased budgets become necessary to maintain brand position and sales volume.**
- **Vertical expansion by chains into food processing, recently recommended by one supermarket consultant as a means to increase profit margins, already has had a critical effect on some industry branches. If continued, it portends economic problems for more and more food manufacturers.**
- **Private labels are increasing in numbers, expanding in kinds of products, and growing in strength. Every indication points toward a continued over-all growth of chains' private brands.**
- **Harassed by localized and regional problems, food manufacturers seek new marketing techniques and methods to fight these marketing "brushfires".**



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How 'Relate' Workers in Public Relations?

BARNEY HASBROOK kicked off the discussion at the regular meeting of the Guff & Gripers: "Ole, you promised to give us the inside story on just how you went about improving Mull & Mull's hometown public relations."

"I can tell you that Ole's program has worked like a charm!" blurted Batt Bulwark, M&M's works manager. "Our management's sure happy about the PR job he's done for us!"

"Do you mean Ole's already won over the townspeople?" queried Zenith Canning Co.'s Ed Strong. "As I recall, they were generally convinced that M&M used horse meat and scraps in their products, as well as hired infected personnel. How'd you ever spike something like *that*, Ole?"

Ole took up the challenge: "We built our plan around a program of plant tours for the families of employees."

"Good switch—recognizing the influence of the workers," approved Ed. "Rumors by former—striking—employees and their families may sweep away the housewives' goodwill. But facts by present employees can win it back."

Ole nodded, and continued: "We met with M&M workers in small groups, and told them how, on 'Family Day,' each employee would conduct his own family through the entire plant.

"Employees working at each location would explain what *they* did, and the importance of their part in the processing steps. And when a worker got his family to his own station, he himself would do the talking."

"I take it," remarked Barney, "that the tours went over with a bang. But you don't mean that's all it took to rebuild M&M's hometown PR fences, do you, Ole?"

Ole chuckled. "The tours were the high point," he admitted. "However, they didn't take place until we'd made sure the employees themselves were thoroughly 'sold' on the purity and wholesomeness of M&M's products."

"Seems to me," Ed interjected, "that I've heard Batt mention that M&M workers aren't permitted to go from one department to another."

"That's right," Ole acknowledged. "So, of course, before a man could take his family through the plant, he had to become acquainted with the route himself. We arranged small group tours that included every department.

"These were conducted by executives who were thorough in their explanations. As a result, all the employees have got a better understanding of the company—along with much more respect for it and its products."

Batt cut in impatiently: "The tours helped, of course. But, come on, Ole, get with it. Tell 'em how you got the Government boys to knock down all those lies that had been spread about us."

Barney grinned. "That's what we're all waiting for, Ole. The top card."

"Easiest part of the whole deal," Ole stated. "Before running any tours—of either employees or families—we set up meetings with worker groups and Government representatives in the plant."

"What Government men are stationed at M&M?" Ed inquired.

"The company's meat processing," Ole answered, "is constantly checked by USDA's Meat Inspection Div. And fruit and vegetable products are continuously inspected and passed for grading by USDA's Agricultural Marketing Service. M&M assumes this latter service voluntarily, and pays for it.

"These USDA men emphasized, to each of the M&M groups, the safeguarding functions of all governmental agencies—state, municipal, and federal. And believe me," Ole assured the G&G'ers, "their talks were convincing enough to remove any doubts as to the safety measures taken with M&M's products—or, for that matter, all U.S. processed foods."

"Rumors by former employees may sweep away the housewives goodwill. But facts by present employees can win it back."

At this point, Ole's face lit up in a new grin: "I have to confess," he went on, "that an employee beat me to the draw on my next play."

He explained: "During the question period at one of the meetings, a worker asked if it would be possible to have such men as the USDA'ers tell his PTA the same reassuring information he'd just heard.

"The answer, naturally, was that such opportunities are welcomed. And *that* news must have spread like wild fire. Already, governmental representatives, both state and federal, have addressed such groups as women's clubs, PTA's, fraternal and church groups, and the like."

"That is one on me," boomed Batt. "But who pays for these speeches? Us taxpayers, I'll bet!"

"No, Batt," Ole corrected. "Those in the departments who aid in safeguarding our foods are proud of their work and willingly explain it publicly when opportunity permits."

Ed was glancing at his watch. "I'm mighty interested in the rest of the details of your program at M&M," he announced. "Can we count on hearing more?"

Ole nodded. "Sure thing—at our next meeting." —*End*

IVAN C. MILLER
"Food Engineering"

YARWAY IMPULSE* is the only steam trap that continually samples fluid in the line to maintain condensate discharge close to steam temperature, eliminating condensate as soon as it forms.

Condensate seals the small control orifice against steam leakage under all normal operating conditions.

Here's why your best steam trap buy is Yarway Impulse—

1. GETS EQUIPMENT HOT FAST—AND KEEPS IT HOT
2. ONLY ONE MOVING PART
3. LOW MAINTENANCE
4. SMALL SIZE—LIGHT WEIGHT
5. GOOD FOR ALL PRESSURES
6. NON-FREEZING
7. COMPLETE LINE FOR EVERY REQUIREMENT

ONLY ONE MOVING PART, A SMALL STAINLESS STEEL VALVE, ACTUALLY "FLOATS" ON THE CONDENSATE LOAD.

Actual size ¾" trap

* A COMPLETE LINE OF STEAM TRAPS, ALL OPERATING ON A PROVEN THERMODYNAMIC PRINCIPLE.

YARWAY impulse®

Manufactured by YARNALL-WARING CO., 127 Mermaid Ave., Philadelphia, Pa.
Stocked and sold by 270 Industrial Distributors
Write for free bulletin "The Why and How of Steam Trapping"

SUPERMARKET CONCESSION groups more than 200 items for all phases of meal planning, sets them off to good advantage with blue Formica shelving, window boxes, and fluorescent lighting. Schrafft's installs and stocks the section, selects items, sets product price. Only expense to retailer is for utilities (overhead lighting, refrigerated cabinets) and check-out. Fee to store is a fixed percentage (around 10%) of department's sales.

In-Store QC and Shopper Service Spur Premium Foods

Schrafft's new 'store-within-store' scores with booth attendant who keeps vigil over shelf goods, gives personalized help . . . Restaurant's long-planned supermarket venture accents angles worth your study

THE NEW STRONG BID by well-known restaurants to snare a bigger chunk of the consumer's food dollar spells stiffer competition for your product franchise. For, these mass-feeding firms now see supermarket lines of menu specialties under their own brands as a 'sure road' to broader markets.

This expansion beyond their public dining-room base was first spurred by the population shift to the suburbs, growth of supermarkets, and changed habits in food buying and meal planning.

The better-class eateries figure they're in a strategic position to corral in-home sales because of the quality reputation they've built up over the years, the "captive" audience they have on which to try out new dishes, and their first-hand experience in satisfying meal-time needs.

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

One of the most ambitious efforts in this direction is Schrafft's new Quality Isle concept—a bold "store-within-a-store" concession that's a traffic pulling mass display of more than 200 products, including baked goods, frozen and fresh prepareds, candies, ice cream, beverages, and various pantry items.

Of course, special in-store setups are not new.

But, the ingredients that give Schrafft's step special significance are: (1) Pointed R&D work that preceded the move, (2) personalized service by a carefully trained "chaperone" who carries quality control through to the store level, and (3) shrewd merchandising that targets community "influentials."

Preceding the firm's large-scale entry into supermarkets were several years of intensive market research and product development. Objectives were to find out what concept people had of the restaurant chain, how items could be styled to modern day selling trends and food-buying habits, and what would give the Quality Isle a competitive edge over other concessions.

Glen E. Marlatt, wholesale divi-

sion manager who heads up the QI program, feels that Schrafft's starts off with a strong pre-sold brand name as a result of the firm's diversity: 44 restaurants (serving 60 million meals in '58), 39 operated business dining rooms, hundreds of "coffee break" clients, and 10 counter shops or retail stores. He further stresses that the company's maximum product control in all these operations has provided a built-in reputation for top-quality.

Consumer sampling, used as a guide to item selection, indicated a broad product potential. According to Vice-President H. Morgan Shattuck, the probing revealed that "people associate Schrafft's with the entire meal course—everything from appetizer right through to dessert."

Gets Green Light

With this "go-ahead," the firm began to test-build its product line—focusing on menu items which had pulled well in its own dining rooms, creating new frozen foods, and modifying business-office favorites for in-store conditions. And "market tests" for each item in the firm's own retail shops, plus those restaurants with take-home service, gave important clues to consumer reaction.

At the same time, Schrafft's looked around for a way to score a beat on other restaurants who were already expanding their supermarket sales. It found that rivals tended to specialize on a single food-type—Horn & Hardart on fresh prepareds, Stouffer on frozens, for example.

This absence of complete line offerings by competitors, plus the consumer's "whole meal" picture of Schrafft's, pointed company officials in the direction of the Quality Isle concept with its multi-variety of products.

Once this course was set, the big problem was: Would a premium-priced line generate sales in today's supermarket setting, where pressure on prices gets worse each day?

A persuasive answer was supplied by the firm's own success with supermarket selling of premium-priced ice cream. Introduced to food stores in '53, just when private labels began depressing ice cream prices, the Schrafft's product has shown steady year-to-year gains (sometimes as much as 25%), despite the fact that the prices are more than double those of private brands and considerably higher than those of competing commercial labels.

PLANNING future installations of Quality Isle setups are (l. to r.) George Schrafft, ad mgr.; H. Morgan Shattuck, vice-pres.; and Glen Marlatt, wholesale div. director. QI name, selected from more than 150 submissions, associates firm's quality reputation and supermarket-aisle idea.

A key factor behind this impressive performance is the manufacturer's tight in-store product control that insures top quality. Merchandising men constantly check retail cabinets and replace "out-dated" merchandise or damaged packages.

Now, Marlatt is betting on the same kind of quality-sales control (from manufacturers to customer) to help put over Quality Isle. All products are store-delivered in company trucks from the New York city plant, and are shelf-stocked by company personnel.

On hand to supervise the booth is a special attendant, specially trained for the assignment. Primarily she gives personal service to customers—helps out on meal selection, offers menu tips, answers nutrition queries.

Equally important, she's Schrafft's in-store control. She orders next day's needs, arranges shelf displays, replaces scuffed packages, and restocks merchandise. This way, chances of mishandling by store personnel or customers are virtually nil.

Of course, Schrafft's stands to profit from the chaperone several other ways, too. She can do some in-store brand selling more effectively than any P-O-P piece, keep an eye out for what the competition is doing, and learn what is on shoppers' minds. Most significantly, though, her presence symbolizes the "personalized" service that food store shoppers, today, look for in vain as conditions in crowded supermarkets become increasingly hectic.

This service lack is dramatically illustrated in a recent poll by BBD&O's Panel of Consumer Opinion. Reports that ad agency: 13% of shoppers feel store personnel could be more helpful, and 3% find store clerks "never helpful." Also: 7% "frequently" have trouble locating store clerks, while 36% "occasionally" do.

Easy to Spot

Shoppers can't possibly miss seeing QI's special blue-colored Formica shelving, topped by fluorescent fixtures and a large size name plate. The section is made up of 4-ft. counters. These can be placed in a continuous line, back to back, or at right angles with one another.

In the first three test stores—two Bohack units on Long Island and a Safeway store in Springfield, N. J.—the counters average 45 linear ft. Marlatt insists on 36-50 ft., contending at least 36 are needed to do the job right.

The three test outlets were picked because of their different character. However, all three have one thing in common: Location in relatively high income areas.

Marlatt insists, however, that QI will appeal to other income levels, too. He says past market studies indicate that Schrafft's premium ice cream draws sales from middle income brackets, too—particularly for special occasion buying.

Each of the three stores have treated QI differently. Bohack's Manhasset outlet placed the section in an L-shaped arrangement opposite the meat and dairy departments (busiest store spots), while the chain's East Hills unit gave it part of a gondola and a front end in the bakery area.

Safeway has the sections running in a straight line against a wall just inside the store entrance. This is probably the most effective setup as far as mass display impact is concerned.

Although retailers are loath to surrender control of their floor space, Schrafft's has several pitches with which to woo them. For one thing, there's little cost to the store (except for electricity for light and refrigerated cabinets), because the restaurant firm, at its own expense, provides, installs, and maintains the section (which takes up less than 1% of store area).

Marlatt says that QI has helped the stores pull in new traffic—especially from upper income brackets. Trade sources estimate that stores

with the department have already seen overall volume shoot up more than 10%.

Thus, the pitch that gets the sharpest drumming is the "plus" business QI can generate, especially from "new" traffic that will spend dollars in other departments, too. Marlatt plays up what Schrafft's has done with its ice cream, and stresses that the new take-home foods will tap a bigger source of new volume.

In the non-QI stores, supermarkets buy the ice cream at, roughly, 42¢ a pint and sell it at 63¢—a 21¢ gross profit. Marlatt notes that some of these supers enjoy a gross profit of $300 per lineal foot. This averages out to about $5.76/ft. per week, which is strikingly higher than the comparable $3.82 figure reported by *Progressive Grocer* in its Super Valu study.

Schrafft's feels the ice cream experience proves people will pay more for top quality.

Aside from banking on brand reputation to pull customers, the firm makes a strong play for community "influentials"—or taste setters—to spread the word about QI. Aim is to corral the most likely prospects first, then hope they'll spread the word.

Each of the three store openings was marked by special ribbon-breaking ceremonies in which civic officials and club leaders played a part. And the firm's promotion model, fetching Candy Schrafft, toured the areas in an early vintage auto bedecked with posters, announcing the QI.

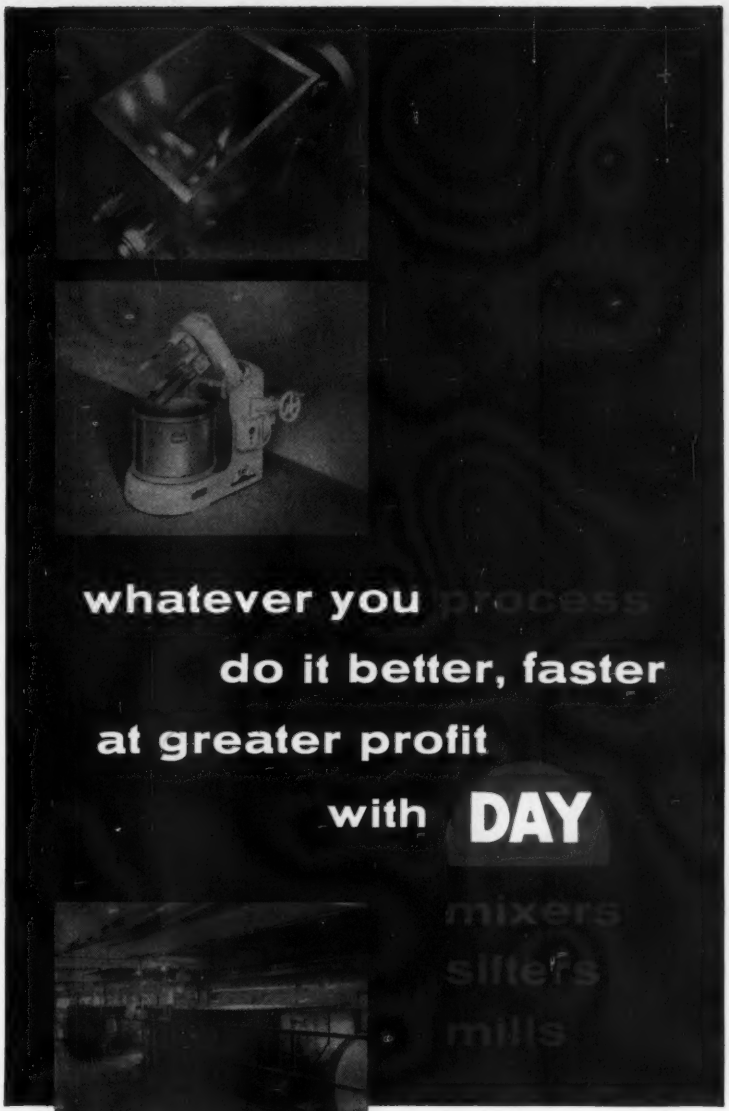
Future Plans

Once the trial period is past, Schrafft's will map out a store-by-store program to install additional QI setups. It's expected that about seven more may be opened before the summer is out. Naturally, as more sections are placed, the company will be in a better position to shave unit production costs.

For the time being, though, it's unlikely that the concession idea will be pushed beyond the Middle Atlantic states area. Reason is that the company only opens outlets where daily delivery of fresh-made goods is possible.

Of course, it will continue to sell its non-perishables over as wide a geographical area as possible. And new accounts will be opened for ice cream sales.

But, if QI grows, the firm will have a potent weapon with which to pull all of its diverse products together in a coordinated drive to tap a rich potential in the supermarket field. —*End*



DAY mixers, sifters, blenders, roller mills and pilot plant equipment are found in every major process plant, helping produce better products, that sell more profitably. Manufacturing techniques that achieve a high degree of efficiency allow you to purchase Day equipment economically. Lab facilities are available to test your product. Equipment Catalog sent on request.

J. H. DAY Company

Division of The Cleveland Automatic Machine Co.

SERVING THE PROCESS INDUSTRY SINCE 1887

4924 Beech Street, Cincinnati 12, Ohio

CIRCLE 51 ON READER SERVICE CARD

Sonic puts
ULTRASONICS
to work

..in Flavor Emulsions processing time reduced from days to hours... process temperatures down from 200°F to 78°F...uniform micron-size particles, that's what Sonic homogenizers are doing for Foote & Jenks well-known flavor specialists.

The purchase of Sonic equipment followed a five-year research program on homogenizing with ultrasonic equipment which resulted in extending the storage life of flavor emulsions to over a year. Beverages made from these emulsions had longer shelf life, too.

..in Peanut Butter a plant manager of one of our customers installed a Rapisonic for his peanut butter. The improved spread-ability upped sales 40%...the manager's reputation leaped right along with sales, too.

Sonic Homogenizers develop and use all the energy right in the liquids with only 1/6 to 1/10 the power, and at a fraction of the first cost, of conventional equipment . . . maintenance-negligible.

The Sanisonic
...meets sanitary requirements

Other Models
RAPISONIC
...production homogenizer
MINISONIC
...for small batches
DISPERSONIC
...abrasive emulsions
AUTOSONIC
...continuous supply

Sonic homogenizers can give you a superior emulsion, too. Send for technical bulletin

Sonic
SONIC ENGINEERING CORPORATION
146 Selleck Street, Stamford, Conn.

Score On 'Better Meals' Drive

FE poll finds that food firms, hard pressed to build own franchises, shrewdly weigh newspapers' big '59 promotion . . . But dailies aim for strong local retailer tie-ins

JOCKEYING for shelf position has become so intense today that food firms are increasingly reluctant to budget ad dollars for institutional-type industry-wide promotions.

This is the undertone noted in comments made by manufacturers to FOOD ENGINEERING when polled on their participation plans for next month's "Better Meals" campaign (sponsored by Bureau of Advertising of the American Newspaper Publishers Assn.).

Most of the firms spot-checked by FE said they don't plan to take out extra space on a national scale for the drive (dates: Sept. 14-26), but that they intend to insert "Better Meals" logos in regularly scheduled ads. However, trade sources did report that as of the first week in July at least 13 companies plan to use paid space in one form or another, 21 will insert logos, and 11 will have p-o-p.

The replies FE received in its survey point up the hurdles any industry-wide promotion faces.

The extent to which brand battling now shapes company advertising expenditures is put this way by one big West Coast outfit: "Our efforts must be keyed to promoting the sale of our own brand. An umbrella-type promotion, such as this, doesn't give the individual manufacturer any sort of distinctive quality. And, in product merchandising, that's what you must constantly keep in mind."

Because national advertisers schedule their promotions far in advance, many companies report that their '59 media commitments were contracted last Fall.

A soft drink firm, already making up '60 ad schedules, explains: "Since this is a dated promotion, and we buy ad materials on a full-year basis, it's impractical to add additional media to support the campaign."

As is the case with many industry-wide drives, some outfits consider the timing bad because of special circumstances. One multi-product company says: "We always push one of our biggest items that month, and don't want to muddy up the waters of our promotion." And a dried fruits concern, pointing out that late Fall and Spring are the heaviest merchandising periods for his products, feels that "a September date doesn't fit well."

According to one juice-firm man, the promotion's nutrition theme (which BofA figures as a strong puller) "will initiate a lot of thinking among housewives concerning their responsibility to their families. But," he adds, "it will be up to industry to take advantage of the program's momentum."

A wait-and-see attitude prevails among several firms, who frankly state they want to see how this year's drive makes out. Meanwhile, a BofA spokesman tells us newspaper support to date does point to a follow-up of the "Better Meals" campaign next year.

To put this year's drive over, newspapers are pushing hard on the local level through tie-ins with retailers and wholesalers. As of mid-July, 917 dailies had pledged active support, many with elaborate merchandising programs.

One trade source opines that, with national brands holding back, the chains may have a special opportunity to hook their house labels to the promotion's nutrition theme. Also, that smaller regional packers have a chance to score a beat.

Of course, a key factor behind "Better Meals" is the newspapers' effort to reverse the trend of food dollars to TV. During the first quarter of '59, food and beverage firms budgeted 10% more for network TV, 32% more for spot TV. And these gains will be repeated when second quarter results are in, predicts a Television Bureau of Advertising spokesman. Compared to this, food-and-beverage newspaper expenditures (national) are up about 5%.

And a Radio Advertising Bureau spokesman says that food advertisers, who accounted for 20% of all spot radio time bought in the first quarter, will allocate about $2 million more to that media this year. —*FE Staff*

now . . . handy smaller size . . . new features

Tote Boxes

by WEAR·EVER

Smooth, rounded, easy-to-clean corners
#24 Over-all Size:
23⅞" x 17-1/16" x 10⅜"
#24 available without handles to fit Cres-Cor Pan Rack
Exclusive Open Bead design
Stack when filled
Strong, smooth one-piece handle
Nest when empty
#35 Over-all Size:
34 3/16" x 16⅞" x 12"
Dolly available for #35 shown at left.

You asked for it . . . a smaller version of the famous Wear-Ever #35 Tote Box. It's our new #24, shown at top in the above illustration, and it's available *now.*

We've designed it particularly for you whose needs call for a lighter, smaller, easier-to-handle container. It is available without handles, to fit perfectly in a Cres-Cor pan rack.

This new box incorporates the same quality construction features as our standard size box—special extra hard wrought Wear-Ever Aluminum Alloy, sanitary open bead and extra strong, double-embossed bottom.

Like its big brother, shown in the smaller photo, this new box stacks when full, nests when empty and is available with your identifying imprint on side or end, if desired.

For full information on our complete line of food handling items, call your local Wear-Ever man, or send coupon below.

Ask us about our special equipment to your specifications.

WEAR·EVER ALUMINUM UTENSILS

WEAR-EVER ALUMINUM, INC.
WEAR-EVER BLDG., NEW KENSINGTON, PA.

Wear-Ever Aluminum, Inc.
308 Wear-Ever Building, New Kensington, Pa.

GENTLEMEN: *I'd like to know more about your Tote Boxes and other handling equipment.*

☐ Send me your catalog. ☐ Have your representative see me.

NAME.....

TITLE.....

Fill in, clip to your letterhead, and mail today.

Reduce spores and other air-borne contaminants with the

HONEYWELL ELECTRONIC AIR CLEANER

In the food processing and baking industries, spores and other microbial cells are costly enemies, producing damaging bacterial and fungal growths. The Honeywell Electronic Air Cleaner reduces the concentration of these spores and microbial cells by electronically trapping particles 100 times as small as those stopped by mechanical (fibrous) filters.

This plate was exposed to uncleaned air. Result: 104 colonies of bacteria and fungi developed.*

This plate was exposed to air cleaned by the Honeywell Electronic Air Cleaner. Result: Only 11 colonies of bacteria and fungi developed.*

*Actual unretouched photos of quantitative results using the sieve sampler technique. Each plate represents the microbial content of 31 cubic feet of air.

PAYS FOR ITSELF! Send coupon today to learn how the ELECTRONIC AIR CLEANER can pay for itself in your business.

MINNEAPOLIS-HONEYWELL
DEPT. FG-8-98,
Minneapolis 8, Minnesota

Please send free copy of Electronic Air Cleaner booklet, "A Close Look at Air-Borne Dirt." We have the following problems:

_____

_____

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

CASE HISTORY OF MONTH

From files of *National Menu Census of Market Research Corp. of America. . . .* Material is factually correct. Identities of products and companies have been masked to insure anonymity.—The Editors*

How Market 'Fix' Saved $250,000

Management's problem

IN LINE WITH our expansion-diversification program, we continually explore the possibilities for profitable operations in different segments of the food industry. Recently, we became interested in a condiment item.

An opportunity exists to enter the field via acquisition of a company manufacturing the product. We want to find out everything we can about the current and potential market for this kind of product.

WHAT WOULD YOU DO?

Management's decision

A wide range of information on home use of the item is contained in the National Menu Census, a year-long study of food preparation and consumption in American homes conducted by MRCA. Through a limited subscription to this study, we secured answers to a series of questions designed to reveal vital market characteristics.

The questions dealt with such subjects as: Percent of people using the product, frequency of serving, use as an additive or ingredient in various dishes, and the degree to which the product was "home-made" or bought in commercial form.

Result of action

Menu Census data made us reappraise the desirability of entering the field, especially by way of acquisition. For example, we learned that more than half of the product's consumed volume was home-prepared.

Furthermore, none of the available brands had any appreciable national strength. For the most part, they derived their sales regionally and locally.

A clue to the reason was the fact that housewives showed extreme individuality in preparing home-made varieties. It followed, therefore, that no large group would buy any standard formulation of the product. Thus there would be no point in acquiring the company under consideration, because we would not be getting a brand franchise.

As an alternative, we turned our attention toward the possibility of developing a partially-formulated product in our own laboratories. Using the Menu Census as a guide, we could use the ingredients which appear in home-made forms of the product as a base—and then invite housewives to "finish" the item as they saw fit. This possibility is still being investigated.

Most significantly, though, we estimate that we saved about $250,000 by not going ahead with the planned acquisition.

* For more information, write to the Case-History Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y. Your inquiry will be directed to source of case-history item.

How much more does quality cost?

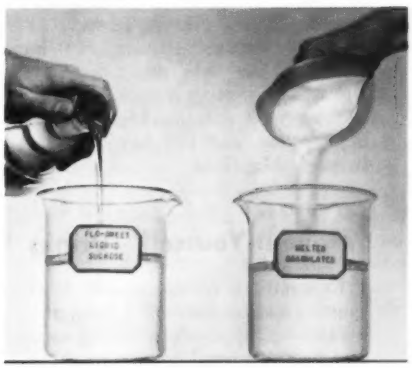
Not a penny, when you use Flo-Sweet for sweetening!

In fact, Flo-Sweet *saves* you money in a number of important ways. By eliminating manual handling of sugar. By avoiding sugar melting costs. In many areas, in the cost of sugar itself.

But a vital reason for the revolution that Flo-Sweet is making in food processing is *quality*. Flo-Sweet liquid sugars make possible a degree of quality control, and even quality improvement, that is difficult or too expensive with ordinary granulated.

You can easily verify Flo-Sweet's higher quality yourself, through the simple test shown at the right. Just dissolve some of your favorite granulated . . . concentrate it to 67° Brix . . . and compare its color with that of Flo-Sweet liquid sucrose.

Your Flo-Sweet engineer will be glad to help you explore ways to use Flo-Sweet liquid sugars in cutting costs while boosting quality. Why not consult him soon?



REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

FLO-SWEET®

FIRST IN LIQUID SUGAR

MARKETING SIGNALS

"Ads Pay? And How!"–GF

Food firms must "get a 'share of consumer mind' before they can win a better share of market," GF's Pres. Mortimer told stockholders as part of a pointed lecture on why the company bankrolled a $96 million ad program last year. The outlay, 10% above '57, helped jump net income 11.9%, the prexy stressed.

Ad budgets for the firm's 81 consumer products, drawn up as part of the annual market plan, pivot on two key factors: (1) What it takes to maintain market position, and (2) what's needed to boost sales. The outlay for new items hinges on "how fast it's feasible to try to build volume, and what such growth rates call for."

A basic GF merchandising tenet, Mortimer says, is that "the surest way to overspend is not to spend enough to do the job. It's like buying a ticket three-quarters of the way to Europe—you spend the money but don't arrive there."

Chains Push Vertical Expansion

New store openings aren't the only way retail groups are spreading out. Dollar volume of chain-operated packing plants jumped 21% from '54 to '58, reports FTC.

Baked goods, with a sharp 31% rise, account for the biggest chunk (21%) of the $1.3-billion output. Bakers estimate that retailers' house labels have grabbed off 20% of the white bread business.

Chains' meat-plant volume zoomed 71% in 4 yr., now equals 17% of the total. And dairy items, up 49%, do 15% of the overall volume.

GMA Sets Up Coupon Ground Rules

With grocery firms passing out 10 billion coupons a year, GMA lists 7 new criteria for rating effectiveness of collection agencies. Manufacturers should make certain that the clearing houses: (1) Keep dealer and processor services separate, (2) impose no extra redemption fees, (3) don't discriminate between companies, (4) separately package coupons of each retailer, (5) keep all data confidential, (6) police fraudulent redemptions, and (7) furnish proof of financial ability to meet obligations.

"Make-It-Yourself" Drinks Flourish

Expectations for record soft drink sales this year are spurring market entry of a flood of "do-it-yourself" substitutes—pills, powders, mixing syrups, etc. Pepsi-Cola sees beverage retail volume reaching $1.94 billion ($80 million over '58).

One of the biggest newcomers, Warner-Lambert, is pushing the profit theme hard for its soft drink tablets. Three thousand packages of Fizzies return more profit than 25,050 units of beverage powders, company tells margin-minded retailers, and 5-oz. bottled drinks require 34 times the turnover to match tablet's profits.

"Tastemakers" Point the Way

A new method to help food marketers anticipate future consumption shifts is offered by Opinion Research Corp. (of Gallup poll fame). Technique consists of singling out those persons whose changing buying patterns signal what products will win mass acceptance in tomorrow's markets.

OR calls these taste-setters "high mobiles," and says they are set apart from the mass by a combination of three factors: Mobility, values, and income. Insight into their purchasing habits can guide a manufacturer as to what items to emphasize in R&D work, when product elimination or innovation is necessary, and how to time new items.

Profile of the Beer Market

Income level has little effect on how many people drink beer, according to a summer-month survey by Elmo Roper & Associates for Continental Can. The brew is consumed by 52% of upper income adults, 51% of middle income group, and 47% of low income class.

Other findings: The 25-49 age group drinks 66% of the gallonage, men comprise 62% of the buyers, and 59% of the product is bought in grocery outlets (where sales in food stores are permitted).

BRIEFS

Meat packers are among first processors using new St. Lawrence Seaway for Europe-bound shipments. Armour and Wilson find straight-through costs cheaper than inland rates to N. Y. and subsequent ocean-going charges.

Look for chains to get more active in planning in-store merchandising. Topco has new department which develops point-of-sale promotions for member groups.

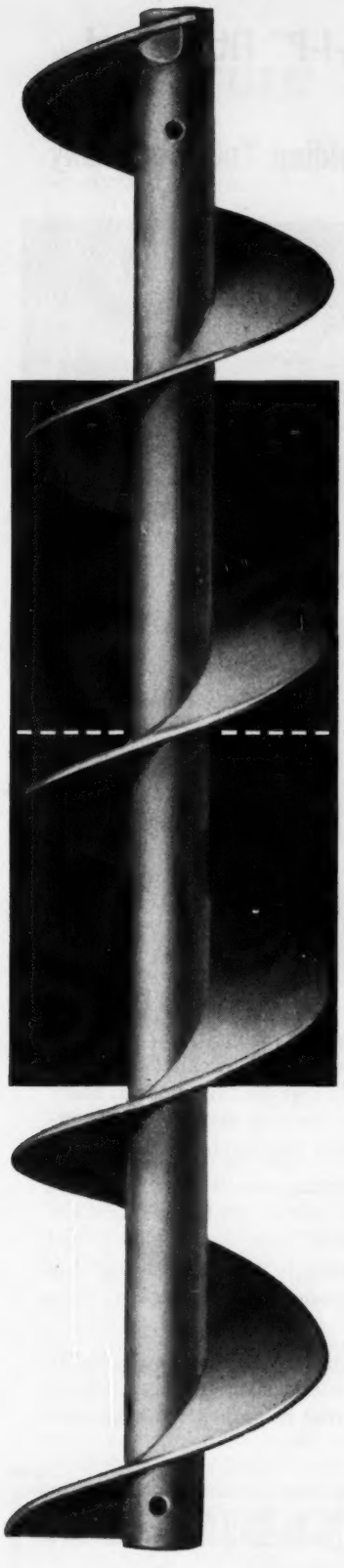
Mothers are more interested in size and convenience of baby food containers than in product's nutrition (which they take for granted), says Institute for Motivational Research.

Per capita consumption of cheese was record 8.6 lb. in '58, reports National Dairy Council. But intake of evaporated and condensed milk (14.6 lb.) dropped for eighth year in a row.

Moving to prevent possible market glut, Calif. Dept. of Agriculture has ordered peach growers to eliminate production from 12% of trees before making deliveries to processors this season.

Over 18,000 promotions were offered food stores in '58, according to National Assn. of Retail Grocers.

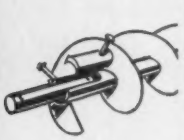
Annual marketing conference of National Industrial Conference Board is set for Sept. 16-18, New York City.



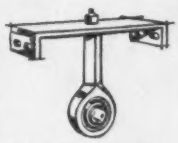
LINK-BELT is

YOUR ONE SOURCE FOR ALL SCREW CONVEYOR NEEDS

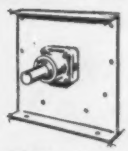
your only source for many



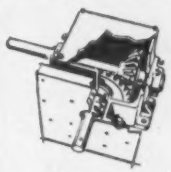
QUIK-LINK CONVEYOR SCREW. For ease in removal of conveyor section without disturbing other components. Can be furnished on Helicoid and Sectional flight conveyors.



HANGERS have wide top bar with slotted bolt holes for easy assembly and alignment. Available with self-aligning ball bearing or with sleeve bearing in babbitt, hard iron, bronze or oil impregnated wood.



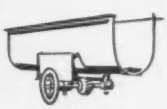
TROUGH ENDS of heavy steel plate are flanged at top and bottom. Furnished with babbitted, bronze or single or double ball bearing flange block, with or without trough end seal. Blocks are interchangeable.



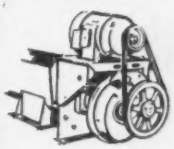
COUNTERSHAFT ENDS with ball and roller bearings or babbitted bearings, for right angle drive applications— common drive for two conveyors at right angles.

TROUGHS are accurately formed and jig-assembled. Steel angles securely welded to trough plate form top flanges. Can be made of stainless steel or other special metals to suit specific requirements.

SEMI-FLANGED, SPRING CLAMP COVERS are more rigid, easier to handle and form a tighter seal than plain type cover. Spring clamps are attached to cover—simplifies installation.



DISCHARGE SPOUTS AND GATES can be located anywhere along length of conveyor trough. Gates can be flat or curved —hand or rack-and-pinion operated.



DRIVES. Link-Belt shaft-mounted speed reducers are simple, compact — can be mounted directly on trough end plate. Motogears and Gearmotors with roller chain drives can also be furnished.

With seventeen basic screw designs, and a full line of components, Link-Belt can furnish anything you need from a single component to a complete line of screw conveyor.

As the foremost producer in this field, Link-Belt offers a range of new product improvements for profitable operation. Quik-Link conveyor screws, hangers, trough ends with ball or sleeve bearings, jig-welded troughs with new semi-flanged spring clamp covers—these and many more are cutting power demands and maintenance costs.

If you have bulk materials to be handled, it will pay you to look into the Link-Belt screw conveyor line. All components are available from stock. Call or write your nearest Link-Belt office or authorized stock-carrying distributor for Book 2989.

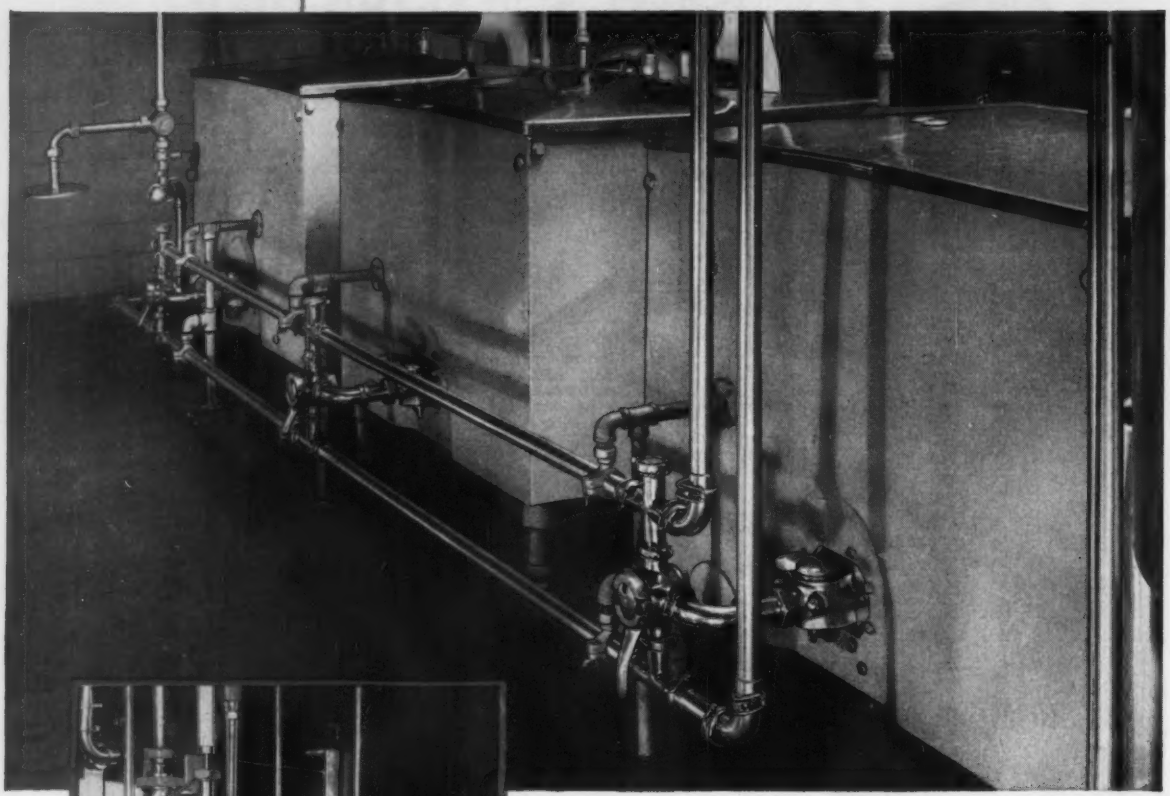
LINK-BELT

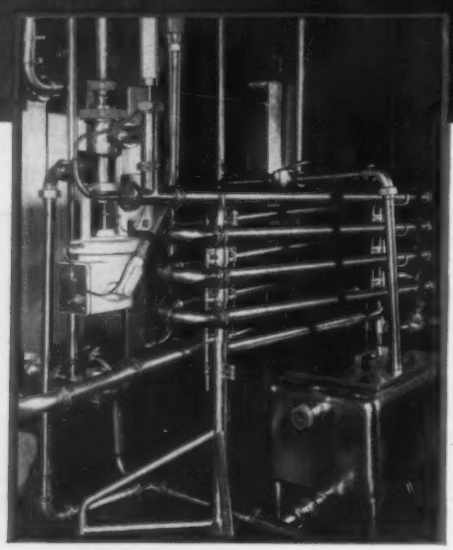
SCREW CONVEYOR

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,230

Another dairy saves space, saves time with . . .

TRI-CLAMP® "C-I-P" Fittings and TRI-CLOVER Holding Tube Assembly





Large view, above, shows extremely compact fitting and valve connections to tanks at Bornhoff's Dairy, made possible by the space-saving feature of Tri-Clamp unions. Directly above is a view of the Tri-Clover holding tube assembly in this modern installation.

Bornhoff's Dairy, Glenview, Illinois, has earned a reputation for highest quality milk products. Helping to keep sanitary standards high at this modern dairy are numerous Tri-Clover sanitary stainless steel fittings, valves, and a complete holding tube assembly.

Practically all of these fittings are of the snap-action "Tri-Clamp" type, which allows rapid and efficient cleaning of "cleaned-in-place" lines. Another feature of these fittings is that less space is required for assembly and disassembly in a "take-down" line, since no tools are required.

Follow the example of progressive dairies . . . install Tri-Clover sanitary stainless steel fittings, valves, pumps, tubing and specialties in *your* processing lines.

5-758

See your nearest TRI-CLOVER DISTRIBUTOR

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6-Feature Shipping Carton

Revamped container for frozen juices is first step in scientific program to bring package design "up to snuff" in eye appeal and product identification

'FUNCTIONAL PLUS' is the phrase for the new Snow Crop frozen juice shipping cartons.

Marking the first step in a carefully planned program of redesign for all Snow Crop containers, the new carton offers high powered product identification as well as important aids to handling and storage.

The new design replaces one which had been in use since the Minute Maid Corp. acquired the Clinton Foods' facilities 10 yr. ago. Initiator of the redesign program is Duane Maybay, assistant director of sales for Snow Crop.

"Our plans call for scientific redesign of the labels of the full line of 14 Snow Crop frozen concentrates and ades," says Maybay. "Goal is to satisfy current and anticipated trends in the field of consumer desires and emphasize the 'eye appeal' of our products."

POINTING OUT the features of new Snow Crop frozen juice shipping containers (stacked atop old designs), is Assistant Director of Sales Duane Maybay. Changes include (A) Teddy Snow Crop trademark, (B) IBM code number, (C) Sales slogan printed atop carton, (D) Initials "U.S.A." making carton usable for export, (E) Color band to identify product, (F) Blank area for imprinting production data and shift codes.

Down to Details

The pace-setting shipping carton has six handy features built into the label:

▶**The familiar 'Teddy Snow Crop' cartoon** has replaced the former simple glass and fruit installation. The result is better brand identification and a more colorful package.

▶**An IBM code number** has been added to enable warehousemen and shippers to quickly identify the case. The number will greatly simplify storage, withdrawal, store handling, and inventory.

▶**A 2-in. color band** circles the carton. An orange band speedily identifies orange juice, a purple one grape juice, etc.

▶**The Snow Crop selling theme,** "You Can See the Difference," is printed on top of the carton. This is a constant Snow Crop selling point.

▶**The initials "U.S.A."** have been added to the carton so that it may be used for export as well as import.

▶**A data area** about 1-in. wide has been left on the lower portion of the carton. This will be used for subsequent imprinting of production data and shift codes.

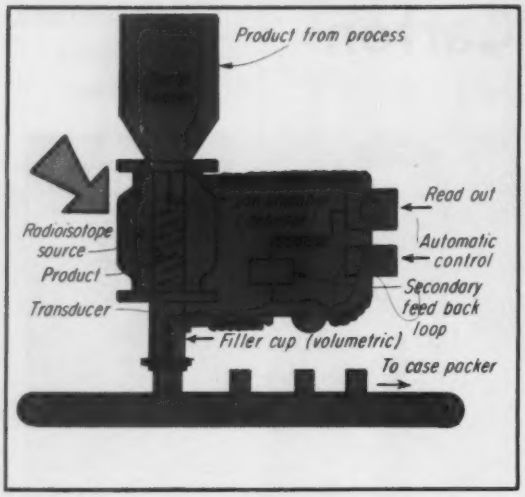
Launching the Program

Maybay began his package revitalization program by determining that the old cases were not performing their full function. Interviews with warehouse personnel and field salesmen helped in developing rough specifications.

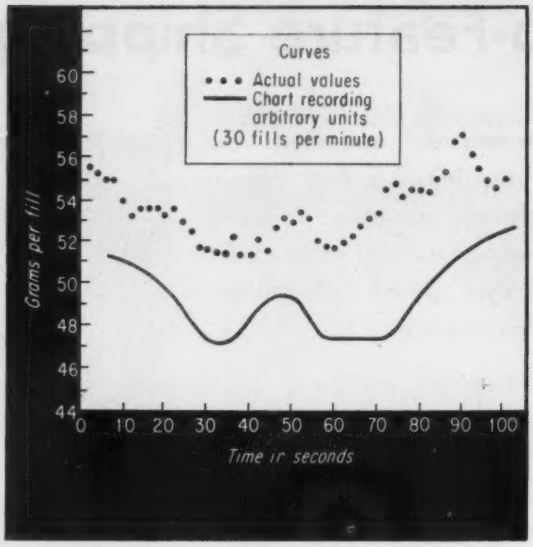
Designers at the James H. Matthews & Co., carton plate firm in Jacksonville, then worked under Maybay's direction to develop patterns. And the new design was finally authorized, after a series of extensive evaluation tests.

Redesign of the other Snow Crop packages will soon be in full swing. *—End*

Creating The Package



ON-THE-BUTTON package weights are assured by special bulk-density controller that links measuring head and electronic hookup for automatic adjustment of filler. In moving from hopper to filler cup, product flows (arrow) between radioisotope source and detector.



CORRELATION of bulk density to package weights is shown by plotted curves. Covered is specific time period, with filler operating at 30 packages a minute.

Sharpens Package-Fill Accuracy

Brand-new bulk density gage, employing radioisotope source, detector, and electronic feedback, provides automatic adjustment of filling machines . . . Seen ideal for wide range of food products

LOOKING FOR a way to eliminate the costly headaches of inaccurate package weights?

Nearing commercial introduction right now is a new radioisotope-employing detector gage which, during an extensive tryout with a large manufacturer of instant nonfat milk powder, proved its ability to prune costs by (1) eliminating overweight-package giveaways and shortweight units that must be discarded to reclaim product, and (2) cutting down on checkweighing and filler-adjusting man-hours.

Significantly, the bulk density controller is adaptable for the filling of a wide variety of free-flowing products like instant coffee, prepared cake mixes, frostings, cereals, dehydrated soups, instant potato preparations, etc. And, with minor modifications, it is suitable for filling machines handling such viscous items as baby foods, dressings, jams, and jellies.

This new line-sentinel, comprising a sealed source (cerium-144) and detector (ionization chamber), got its first trial when the milk powder maker posed the problem of developing better filling accuracy to reduce product giveaways.

The Payoff

After considerable testing, the controller produced these significant gains:

- **Package weight variations slashed from ± 20% to ± 5%.**
- **Over $250 savings per day on product giveaways for each machine filling over 60 containers/min. during 16-hr. shift.**
- **Elimination of product-quality variations (as will be explained).**

Previously, declared pouch weight was 3.2-oz., with the company establishing a 4-oz. target weight to assure more-than-adequate package fill. The manufacturer felt that containers varied ± 10% from this scaling.

Checks, however, proved that the range was considerably higher—up around ± 20%.

Such wide package-weight variation adversely affected quality of the reconstituted product. For, when mixed with the precise amount of water prescribed on the package, underweight contents tended toward the watery, overweight toward the soupy.

A check of the major causes of package-weight fluctuation revealed that volumetric filling operation and bulk density of product (easiest factor to evaluate) were responsible.

Thus began interesting research—to determine how the density varied and whether the changes correlated with package-weight variations. This led to building of a prototype gage employing strontium-90 (source), ion chamber (detector), and proper electronic circuit.

Reason for using strontium-90 was that it appeared to offer the best sensitivity in detector interception

S. REGAS and JOHN V. ZIEMBA

Manager, Industrial Applications Div., Radiation Counter Laboratories, Inc., Skokie, Ill., and Associate Editor, "Food Engineering"

of the radioisotope high-speed beta particles. (Variation in intensity of source-radiation measured by detector is inversely proportional to milk solids' bulk density, with low readings indicating high bulk densities.)

Initially, it was found that bulk density of product varied widely. And, that there were two kinds of variations—short- and long-time.

Short-time variations were due to the product's elasticity and inertia, which were responsible for non-uniform flow of milk solids into filler's volumetric cup. Examined next was the long-time variations—by check-correlating package weights with recorded bulk density. Here, plotting of similar bulk density package weight trends proved that bulk density is responsible for package-weight variations (see accompanying chart).

Additional studies showed need for a different radioactive source, because with this food product strontium-90's beta particles weren't too penetrating. Selected was cerium-144—with harder (more penetrating) beta particles for better detection and more efficient feedback.

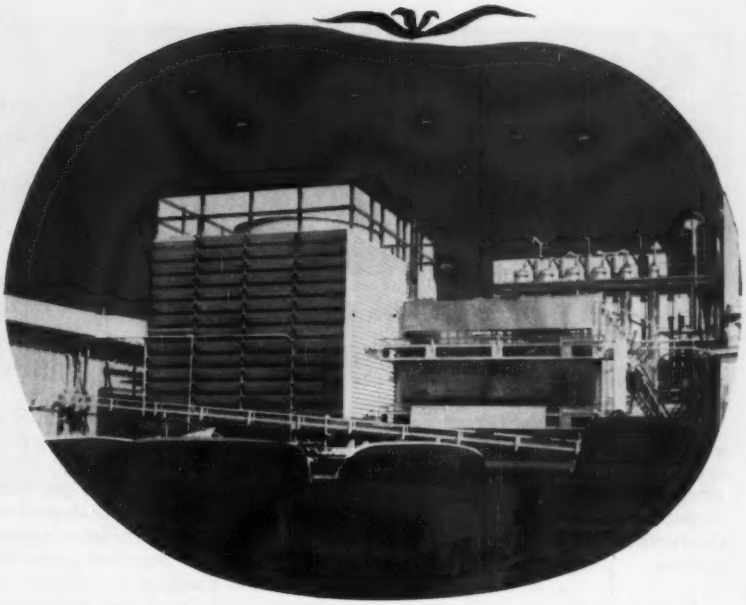
Since variations in the product's bulk density are inversely proportional to its volume, a method was designed to automatically change volume of packaging machine's filling cup.

System (see drawing) operates in this manner.

High-speed beta particles (emitted by the cerium-144 housed in a compact source unit) are aimed at detector (ion chamber) that converts some of their energy (by gas ionization) into measurable electrical energy. Passing the milk powder (between source and detector) lowers the number of betas reaching ion chamber. Resulting reduction in output current indicates product's bulk density (weight per unit area).

The electronic control unit's amplifier magnifies the minute detector-output current sufficiently to operate a meter or recorder. A special high-stability power supply in control unit provides variable feedback currents that subtract from detector current. Meter or recorder reads "zero" when product is on target (no error) or "light" or "heavy" when it's off.

Feedback system operates a fractional horsepower motor that automatically adjusts filler's volumetric cup in accordance with amplified signal corresponding to product's bulk density. Response of bulk density controller is variable, but best results are achieved with a 1-sec. integrating time-constant. For better operating stability, a secondary feedback loop has been inserted between motor and electronic control unit. —*End*



Got a "hot tomato" in your plant?
Cool it with a
Marley Double-Flow Aquatower!®

The process of removing heat from tomato concentrate is a critical one at this California plant that must operate at peak capacity throughout the limited processing season when the temperature of cooling water can "make or break" the plant's productivity. And, as is so often the case where standards of performance and dependability are exacting, the job was entrusted to a Marley Double-Flow Aquatower.

Despite the fact that its usage is seasonally limited to a few months of the year, the Double-Flow Aquatower is a highly profitable piece of equipment. By saving more than 95% of the water that can be wasted in process cooling, it is a self-liquidating investment . . . and once its modest initial cost is amortized, it will return handsome dividends over its long service life. Its contribution to consistent peak production gives it a distinctive value not easily calculated in dollars and cents.

Whether your plant has one "hot tomato," or a series of varied water cooling requirements, Marley offers a Double-Flow Aquatower that will handle the job—dependably, economically and permanently. For information on the wide range of styles and sizes available, call your nearby Marley Engineer or write to

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CIRCLE 61 ON READER SERVICE CARD 61

Aluminum Foil Packaging–Case Liners and Multiwall Bags

Report No. 22 of a Series by Reynolds Metals Co.

The technology of packaging, particularly in the use of flexible packaging materials, is generally associated with consumer goods. Most of the reports of this Series have dealt with products sold through regular retail outlets.

Bulk Packaging Important

Equally important, however, and often involving even more critical problems, is the bulk packaging of products and materials destined for other than retail channels. In this field, too, progress has centered around the use of aluminum foil. In the form of case liners and multiwall bags, aluminum foil provides maximum protection against moisture loss or gain, oxidation, insect infestation, grease absorption and flavor loss for extended periods of time. This has made possible the successful bulk packaging of such foods as nuts, shredded coconuts, dried fruit and dehydrated milk and eggs.

Aluminum Foil Case Liners

Fabricated case liners of heat-sealable aluminum foil laminations are simply inserted in fiberboard or corrugated cases. The resulting containers are low in cost. They save on shipping and on cost of handling. They save on space, whether empty or filled. They can readily be adapted to automatic or production line operation. They can attain high strength, through many combinations of paper, fabrics and plastics. And they can take many shapes or sizes, with changes in size effected easily and inexpensively.

Foil Multiwall Bags

Aluminum foil multiwall bags have the same advantages as case liners but in a non-rigid container. Multiwall bags are especially suited to powdered or granulated material such as chemicals used in many industries. Among these are resins used in molding and extruding and in the manufacture of lacquers and adhesives. These must be kept absolutely free of moisture for best performance, and aluminum foil multiwall bags assure the required protection. Activated alumina is another material which must be safeguarded against contamination and moisture. Like the restaurant owner who advertises: "I eat my own cooking," the Reynolds Metals Company uses aluminum foil multiwall bags to bulk-package its own activated alumina.

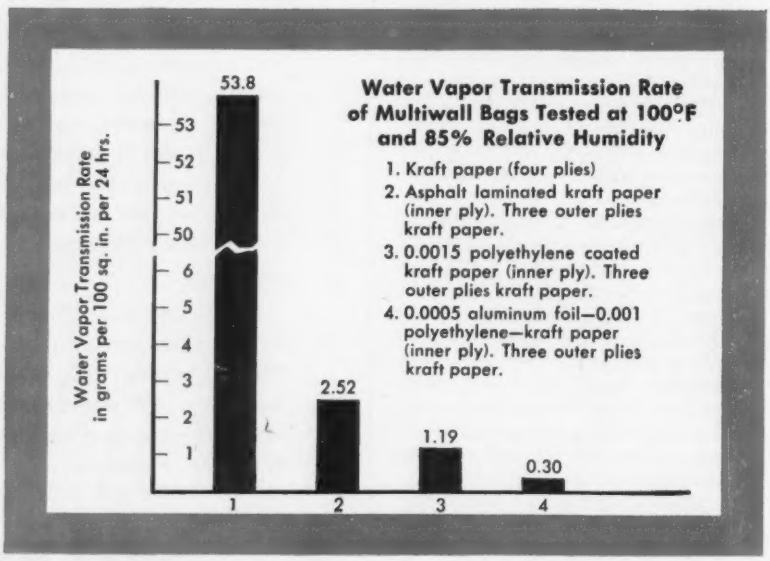
Other products which today are bulk-packaged in aluminum foil include many types of delicate instruments and sensitive equipment. Whether in the form of case liners or multiwall bags, the aluminum foil protects products like these against rust and corrosion.

Explanation of Chart

The chart presented herewith shows the Water Vapor Transmission Rate of different multiwall bags, ranging from multiple plies of kraft paper only, to a combination of aluminum foil, polyethylene and kraft paper. Exact compositions of the multiwall are described in the chart. These bags all contained anhydrous calcium chloride as the dessicant and were tested at 100°F. and 85% relative humidity. All had glue-sealed lap-seam and sewn ends which were wax dipped. It will be noted that materials No. 3 and No. 4 are similar except for the addition of aluminum foil—which addition reduced the Water Vapor Transmission Rate by almost 75%, bringing it down as low as 0.30. Heat-sealed aluminum foil case liners are available with Water Vapor Transmission Rate below 0.05 gms. Multiwall bags are now available with a heat-sealed inner ply. The inner ply consists of .00035 aluminum foil coated with 2 mils of polyethylene. This provides for complete sealing of the bottom, top and seam.

The Reynolds Metals Company does not produce case liners or multiwall bags, but as a supplier of foil, the company has long been active in the research and development of these bulk packaging applications.

For consumer products, Reynolds offers a complete service—finished packaging of all types from color-gravure-printed folding cartons and overwraps to boilable pouches and heat-and-serve containers. For information, call your nearest Reynolds representative or write to **Reynolds Metals Company,** Richmond 18, Va.



Watch Reynolds TV show "Walt Disney Presents" Friday nights on the ABC-TV Network.

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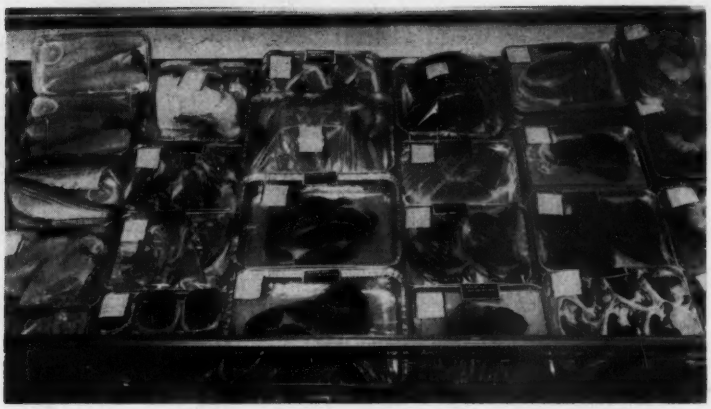

PRE-PACKAGING of fresh meat in rigid foil containers gives housewife convenience of purchasing and preparing product in same container. Here are poultry, chops, steaks, ham slices, and meat-loaf items.

New Use for Foil Cook-Ins

Consumer-ready package adds convenience value to fresh meat selling, opens way for merchandising related items

DOUBLE-DUTY CONTAINERS, whose packaging-home use convenience has helped boom sales of frozen specialties, are getting an experimental try with fresh meats in a joint field test by Star Market, Pittsburgh, and Ekco-Alcoa.

Among the three types of rigid foils in use (see FE July, p. 22) is a 2-piece unit, said to be first of its kind, which consists of a standard (.0035-gage), shallow, curled rim tray and a perforated "plate" which lets meat juices drip through to the container's bottom during cooking stage.

At present, the pack-and-cook units are slanted to special meat and poultry items, where a premium price is permissible (to cover the extra packaging costs). But the supplier envisions further usage with fresh fish as well as companion produce items.

At least one meat packer—Swift—is testing the cook-ins for fresh meats. Other plan to try the containers for frozen cuts.

In addition to the broiler unit, the experimental foils (all .0035-gage) include a frying container and two roasters—one each for top-of-range and oven preparation. Each roaster comes with its own cooking instructions, specially prepared to utilize aluminum's heat conductivity.

To get a fix on consumer reaction, retailer and supplier are querying women who buy the foil-packed meats. Replies to date have been favorable, Ekco says, a frequent comment being that the meat tastes better and juicier.

Also, buyers say, the rigid foil is better suited to freezer storage, since it doesn't stick to the meat the way conventional board trays do on occasion. The containers have also been found useful for storing leftovers.

New merchandising possibilities are opened up by the rigid cook-ins, Ekco feels. For example, Star Market has been selling "fresh dinners"—meat, pre-peeled potatoes, and carrots—in the foil units.

Bright appearance of the foil tends to enliven the meat-case displays. However, further tests will help determine whether the cook-ins can be displayed to better advantage if sold from a special section apart from the regular meat case.

Not considered as competitive with board meat trays, the convenience units are aimed at helping stores sell special meat cuts that can command a premium price. Because the cook-ins cost from 3¢ to 7¢ each, depending upon the size of meat cut, there is a corresponding markup in product price.

Star Market is hand-packing the trays, and overwrapping them with heat-sealed cellophane. Where the 2-piece broiler is used, the plate is manually secured to the container's flanges, product is inserted, and the pack hand-wrapped. —*FE Staff*

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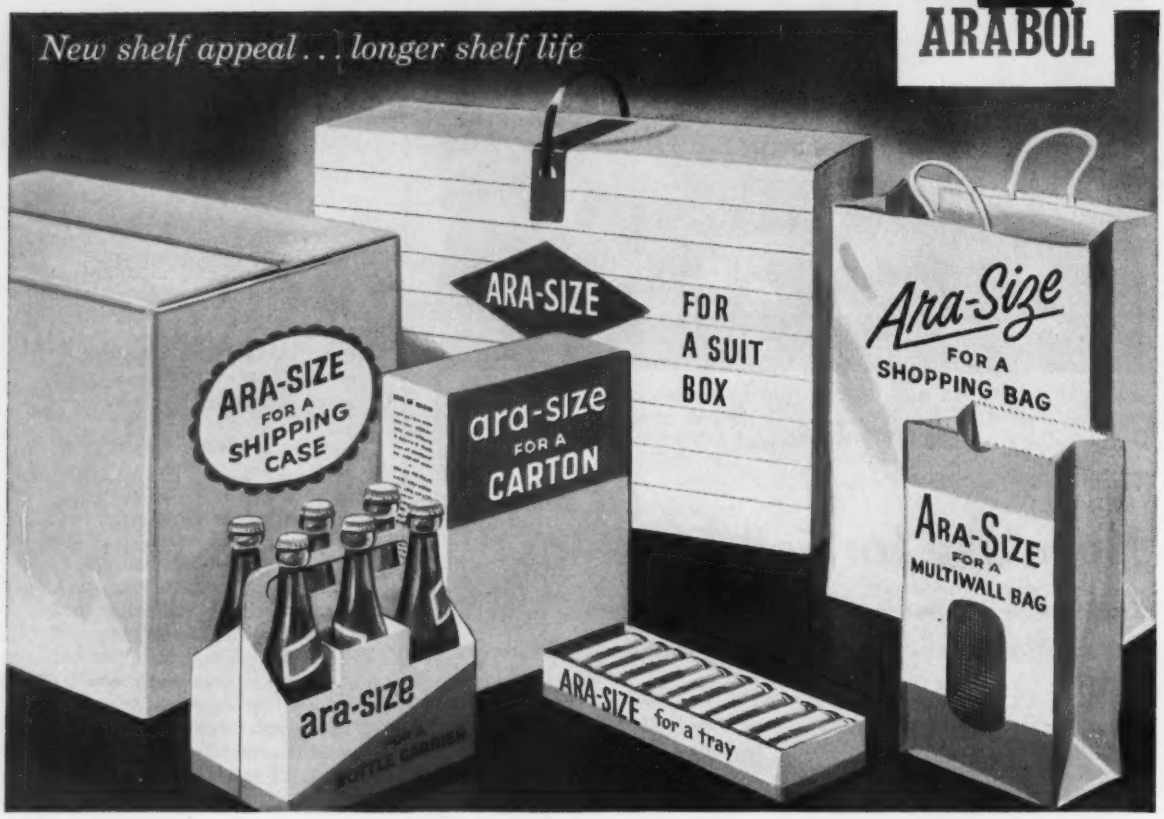
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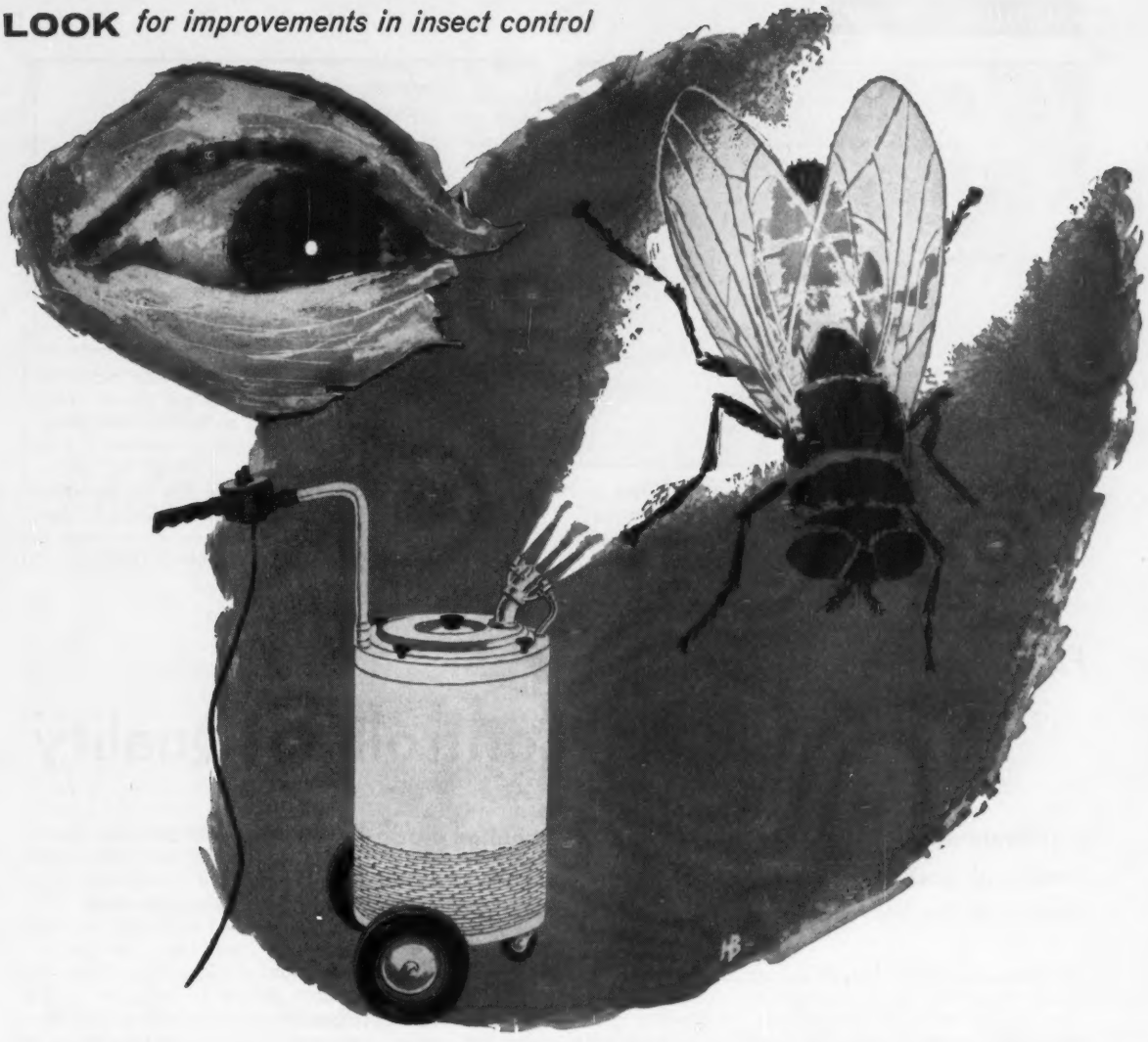

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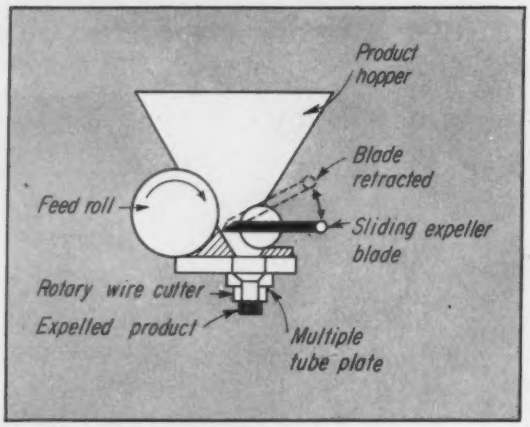
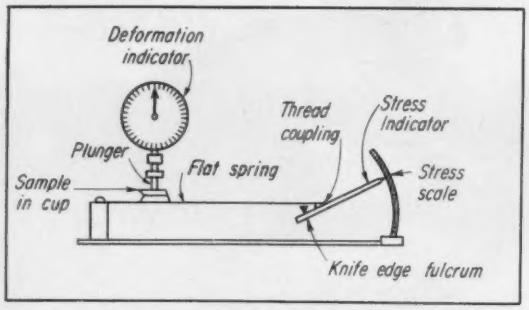


EXTRA-PERFORMANCE EXTRUDER: In operation, expeller blade slides in arc to force product through tube plate, retracts as cylinder unit dwells. Product is cut off after blade retracts. (See item, "High-Rate Candy Extruder.")



CONSISTENCY IS MEASURED (visco-elastic factors) by this special device. Sample is placed on pan secured to flat, horizontal steel spring anchored at one end. Then spring's deflection gages stress on sample—which is translated to scale-reading pointer (right) through lever at spring's free end.

Deformation is produced on sample by ⅛-in. dia. flat-bottom plunger, mounted in a pentrometer (Precision Scientific) that's fitted with a stop so same measurable deformation may be applied each time. (See item, "For Caramel Consistency.")

FE Progress Report:

Big Strides in Controlling Quality

Significant new concepts, methods, equipment, handling practices, and package treatments are detailed at processors' conference for improving products, packages, and efficiency

ADVANCED APPROACHES have always topped the agenda in the live-wire conferences of the Pennsylvania Mfg. Confectioners' Assn. Here are highlights of the recent meeting:

Targeting Better Products

• To maintain an established quality level, it's important to recognize—and evaluate—not only the objective techniques (analysis, instrumentation, and panel testing) but also all organizational aspects.

Suggested is a complete plan wherein product quality is considered as a function of the following three variables:

1. Objective characteristics, such as composition, temperature, time, pressure, etc., measurable by physical or chemical methods. Involved here are preparation of "specs", analysis and placement of raw materials, and check of differing process factors.

2. Environmental influences, such as equipment, plant layout, maintenance and sanitation programs, employee training and cooperation.

3. Chance factors due to limits in control of such matters as human fallibility, personal discretion, scale error, wear of machine dies, etc.—*M. B. Sherman, Gold Medal Candy Corp., Brooklyn.*

QC'ing Center Goods

• For the making of centers, standard formulas, proved to produce quality candies, should be issued to the production department. These formulas should state ingredients, procedure, cook, pieces per pound (coated and uncoated), etc.

Once followed under exact control conditions, uniform quality products are produced. But if breakdowns occur, formula changes must be made. And such changes must be known to the QC department before the centers are removed from starch molds for enrobing.

As a backstop, there should be "breakfast sampling" of all centers made the previous day—with participation by representatives of top management, consumers, quality control, merchandising, and other key departments. Goods that test below standard on flavor and texture are to be rejected, and corrections made.

Also to be evaluated at this "breakfast" are any new centers. Indication of acceptance calls for another plant-wide evaluation by the consumers representative. If the product checks out, samples are to be consumer-checked throughout the country.—*J. W. Vassos, Stephen F. Whitman & Son, Inc., Philadelphia.*

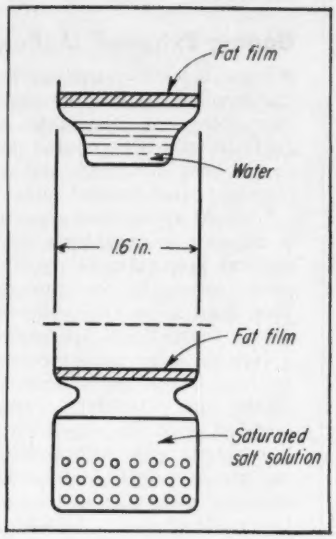
Key Points on Antioxidants

• Use of antioxidants in food packaging has greatly increased due to (1) better methods of applying, (2) reduction in their odor-and-color-forming properties, and (3) shelf-life improvements.

The breakfast-cereal field has led in these package uses—the technique working well due to high ratio between package-surface area and fat contents (low in most cereals).

Effectiveness in increasing product shelf-life is influenced by oxidative breakdown of the fat and ratio of package area to fat content of food.

In the packaging applications, chief problem is the loss of the antioxidants (as much as 90%) as a result of volatilization and steam dis-



THERE'S TROUBLE when moisture is lost through the coating fats. Setup for measuring such losses consists of glass cup wherein paraffin seals off a uniform-thick film of fat. Constant humidity is maintained inside cup with water or salt solution. And to keep a constant difference in humidity across fat film (see lower part of sketch), cup is stored in a closed vessel containing a mixture of water and another salt.

Moisture transferred through fat film is determined by frequent cup weighings. Rate is expressed as an index, defined by equation: $P = Wx/Atp$ — where P is permeability index, W weight of water (millionths of oz.) diffusing through fat film x (measured in tenths of an inch) per area A (sq. in.), in time t (24-hr. days), relative to vapor pressure difference p in inches Hg. (See item, "Moisture-and-Fat Problem.")

tillation. This is, however, being minimized by applying the antioxidants in wax or with absence of water.

As for salted nuts, antioxidants can be spray-applied before salting, or blended with the salt prior to salting. Maximum effectiveness is obtained by applying antioxidants before fat breakdown starts. It's best to purchase nuts with antioxidants added during the shelling operation.—*Ben N. Stuckey, Eastman Chemical Products, Inc., Kingsport, Tenn.*

Insect-Proofing Packages

• Cellophane and polyethylene films used to seal packages can be penetrated by boring-type insects.

Coating with pyrenone (10 parts piperonyl butoxide to 1 part pyrethrin insecticides—FDA okayed) is advised for outer surfaces and closures of packages to prevent such break-throughs. However, each type of package and packaging operation (design, fabrication, and closure) should be studied to determine practicability of pyrenone treatment.

Recommended coverage is 5 mg. pyrethrins and 50 mg. piperonyl butoxide per sq. ft. Outer-case treatment may be more desirable in instances where such container holds a number of small units.—*R. H. Kenan, St. Regis Paper Co., Carthage, N. Y.*

High-Rate Candy Extruder

• Now in operation is an automatic extruder that forms up to 2,500 lb. per hr. of such confections as cream, jelly, marmalade, peanut butter, marshmallow, nut and fruit paste, and coconut-base products (with or without nuts, fruits, etc.). Most sizes and shapes, from miniatures to large bars, are produced.

Employed is a special expeller blade (first illustration). And gentle pressure and agitation make it possible to produce hand-roll type creams without disturbing the set. Too, there's less surface moisture on formed centers. Expeller blade measures given amount of product per stroke, thus assures uniform weights.

Novel twirling wire cut-off efficiently handles sticky, tacky products, such as certain types of creams, marshmallows, caramels, etc.—*C. J.*

What's Ahead in Handling?

• It is conceivable that changing trends stemming from new developments in distribution, purchasing habits, packaging, transportation facilities, etc., will completely alter our concept of warehouses and distribution centers.

Here, increasing output per man-hour is targeted. And it is logical to visualize the warehouse of the distant future —as a big single-story or very special multi-story plant.

Perhaps there will be a return to the urban locations, with new, large multi-story facilities in which each floor will incorporate a complete plant.

We may envision RR cars, highway trailers, and trucks equipped with self unloaders. In fact, carriers of this type have already been developed for certain specific products. Hence, why not self-unloading trucks and RR cars for miscellaneous packages? They could discharge their cargoes on large conveyor aprons that would feed to inspection, classification, and marking lines.

In some plants, merchandise could then be conveyed to stock-storage locations. In others, it could be automatically unitized, possibly without pallets, and sent as intact loads to stock locations via conveyor, automatic tow, or driverless tractor. Perhaps robots devices will put stock into storage.

Merchandise needed for process or shipment could be extracted from stock by the push of a button or signal from a punched card. It would flow on conveyor to classification lines, according to department, customer, routing, time of shipment, etc. And on the way it could be automatically weighed, date stamped, and labeled. Outgoing loads would be unitized and transferred into the delivery vehicles in mere minutes.

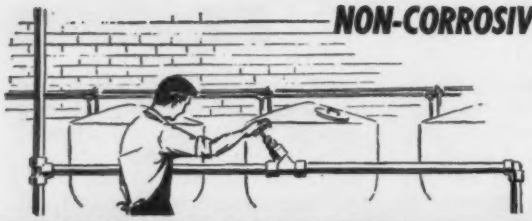
All of these things can be done with present "know-how" and technology. Distillation of plans, economic justification of expenditures, and the required financial outlays will do the rest.

In considering possible improvements of plants or warehouses, one shouldn't be lulled into the feeling that automation is about to speedily solve all problems. Many plants can move ahead today without specific automated equipment—that is, by providing better layouts, more modern handling equipment, advanced methods, and improved structures. So, while we must keep alert to the potentialities of automation, it must not stop improvements along fundamental lines.

Basic problem is to perform specific handling services within certain permissible cost limits. Many elements go to make up such costs, including labor, fixed charges, and other overhead. Frequently, labor costs can be reduced through capital investment, which increases carrying charges.

And so we shall continue the incessent search for the optimum balance between investment costs and wages.

In other words, the food operator must select, from the available facilities, methods, and techniques, that peculiar combination which will produce the best result for his company.—**G. I. Ross, Ross & Co., N.Y.C.**



NON-CORROSIVE...NON-TOXIC

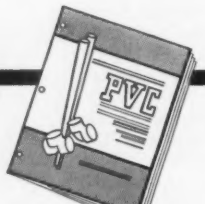
piping systems at low cost

MUELLER BRASS CO. PVC (POLYVINYL CHLORIDE)

RIGID PLASTIC PIPE AND FITTINGS

Mueller Brass Co. PVC rigid plastic pipe and fittings offer the food industry efficient, non-corrosive piping systems at substantial cost reductions. Solutions commonly used by the food industry, such as brine, acetic acid, alcohol, fats and oils will not corrode PVC pipe. The smooth inner wall of PVC prevents deposits from forming and allows a high rate of discharge at all times. The purity of liquids is positively protected. PVC is guaranteed non-toxic and will not impart foreign tastes or odors to the liquid it carries. Its light weight cuts installation time and expense and its permanent built-in finish reduces maintenance costs.

Low installation costs, reduced maintenance and the long, trouble-free life of Mueller Brass Co. PVC plastic pipe and fittings assure the food processor increased savings with each year of use.



NORMAL IMPACT PVC—good impact strength . . . maximum chemical resistance.

HIGH IMPACT PVC — maximum impact strength . . . high chemical resistance.

Pipe is fabricated in 20' lengths; ½" through 3" sizes—I.P.S. schedules 40 and 80. Fittings are available in ½" through 3" sizes; threaded and socket-type for schedule 80 and in socket-type only for schedule 40.

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POLYETHYLENE PIPE AND PLASTIC FITTINGS, COPPER TUBE, VALVES AND FITTINGS

Covert, Racine, Confectioners' Machinery Co., N.Y.C.

Gaging Extruded 'Mallows

• Formula for an extrudable type of marshmallow has been developed by check-comparing percentages of ingredients in a conventional product as cast into dry starch and in the overnight-cured finished piece.

It might appear that a batch that is extruded in accordance with ingredient proportion of the finished piece (overnight moisture-content drop from 28 to 18%) should produce a conventional-type product.

Not so. After aging the extruded product, it was not similar to the regular one. Moisture content of extruded piece was almost the same throughout, with little surface drying, whereas interior moisture of conventional piece was higher and surface moisture lower. Hence, drying by casting starch gives a grain to the surface, prevents sticking.

Increasing gelatin (250 Bloom) in extruded batch from 2¼ lb. to 3-3½ lb. gave a product surprisingly similar to conventional one. But then there were production problems. The batch's viscosity, setting rate, and cutting properties were difficult to control. Solution was to use extra high-strength gelatin (of 300-325 Bloom) along with more moisture.

Suggested formula for extruded marshmallow: Sugar, 55 lb.; dextrose, 5 lb.; corn syrup, 40 lb.; gelatin (extra high-strength), 2.5 lb.; and water, 19 lb. Pieces containing 22% moisture (instead of 18) and 80% air will fluff to form 2½ lb. of marshmallow per gal.—*W. I. Gorfinkle, J. O. Whitten Co., Inc., Winchester, Mass.*

For Caramel Consistency

• There's now a measure of consistency of caramel—in terms of viscosity and elasticity (see illustration). Of the two, viscosity appears to be the more important when comparing ingredient variations and chewiness.

Adding more milk protein increases viscosity and lowers elasticity. More water lowers both characteristics. Varying fat content has less effect on either trait than water or milk protein. However, excessive cooking decreases the viscosity, but doesn't affect the elasticity.—*W. Duck, Franklin & Marshall College, Lancaster, Pa.*

Moisture-and-Fat Problem

• The adverse effect of moisture passing out through confectionery fats used for coatings should be probed—

since this factor can lead to cracked coatings and shrunken candy centers. Also inviting investigation is similar moisture transmission on fat-coated nuts and baked goods.

Simplest way to measure moisture permeability of fat-containing coatings is the use of the glass-cup method (see illustration). Here, the permeability index is calculated by considering (1) surface area and thickness of fat film, (2) vapor-pressure difference across film, and (3) water transferred per unit of time.

Such tests reveal permeability of fat products to range from 2.44 (completely hydrogenated cottonseed oil) to 2,340 (sweet milk chocolate tested at film-damaging high humidity). The relatively high index of 101 for partially hydrogenated peanut oil was due to a sizable liquid component in the fat. Consequently, the more liquid oil in a fat product, the greater its moisture permeability.

For enrobing, therefore, one should select a confectionery fat with lowest possible liquid component at room temperature. Relationship between storage temperature and liquid in a fat must also be recognized. Best move is to store a coated confection at lowest possible temperature (without raising humidity to 100%). The proportion of fat decreases, and confections lose less moisture. Manner in which fat is solidified and its subsequent heat treatment have a great effect on permeability index. Seeding during solidification and tempering reduced permeability.—*R. O. Feuge, Southern Utilization Research & Development Div., New Orleans.*

New Edible Glaze

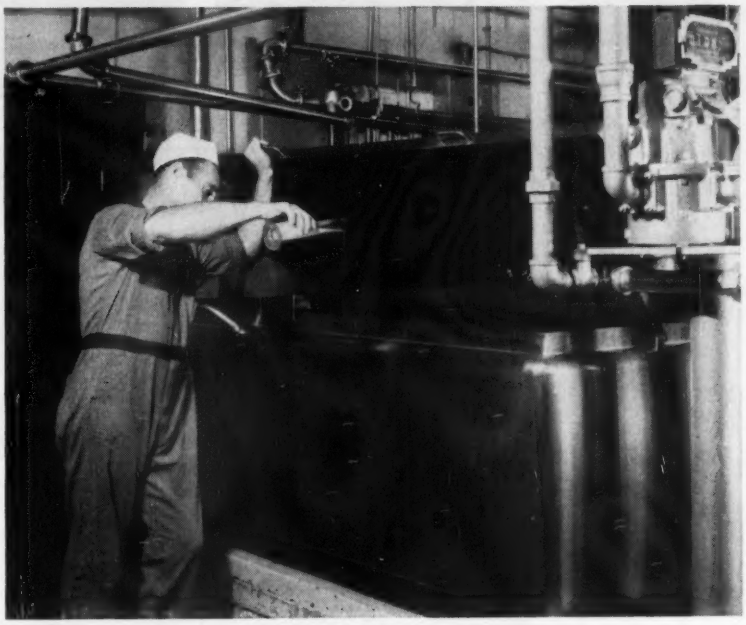
• An edible, nutritive coating material for confections has been developed from zein (corn-protein derivative) combined with an acetylated monoglyceride plasticizer.

Designed to replace conventioned non-toxic glaze made from mineral oil or shellac (limited to 0.4% by law), it has the advantage of being resistant to moisture, vapor, and oil. And tests show that in the working factors it is equal to, and in most instances an improvement on, non-nutritive coatings.

The new glaze (like conventional ones) prevents sticking of such items as sugar burnt peanuts, butter creams, candy corn, chocolate panned goods, hard-gum candies, chocolate and colored shreds (cake, cookie and ice cream toppings), and sugar-coated panned products. — *H. B. Cosler, Quartermaster Food & Container Institute for the Armed Forces, Chicago.* —*FE Staff*

SILICONE NEWS from Dow Corning

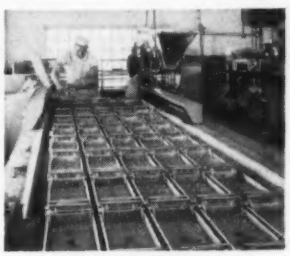
Prevent Costly Foam



Dow Corning Silicone Defoamers Reduce Waste, Increase Capacity

Foam is costly . . . it takes up production space, slows down processing, causes maintenance problems—may even create a fire hazard! You can control foam once and for all with the most effective antifoams ever developed: Dow Corning silicone defoamers.

Odorless, tasteless, and physiologically harmless, Dow Corning silicone defoamers are used extensively in processing and packaging foods, syrups, and antibiotics. Effective at extremely low concentrations and safe to use, they neither alter nor contaminate the end product. Dow Corning Antifoam A may be used in nonstandard foods at concentrations to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 34 ppm.



IN FREEZING MIXES

A typical application: in making Fudgsicles, foaming of milk, chocolate and other ingredients caused numerous rejects of frozen bars and also cut production space. Antifoam AF Emulsion added to the processing prevents foam . . . helps keep production up and costs down.

IN ANTIBIOTICS

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5520.

first in silicones

Dow Corning CORPORATION

MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

FAST, PRECISE ACTION: Dough-billets move through sizer-roller (A), and resulting ribbon descends via feed (B) to forming rolls inside unit. Then middle compartments of bake pan receive strips (C), next outer compartments are filled (D), and knife-edges cut all strips to length (E).

COLORFUL red-and-blue windowed-cartons and film bags are stand-outs in retail displays. Flag device proclaims, "Made With Butter." Big bag is institutional pack (2 lb., over 100 sticks).

Makes Flakier 'Sticks

Speedy, labor-saving Spac unit forms higher-quality breadsticks, multiplies yield and output. Further, it's key to rich new market

STRIKING manufacturing gains are being chalked up by Frisco Baking Co., Los Angeles, with use of this new equipment that both accelerates output and improves product quality.

The unit is the unique Spac breadstick former, credited by the company with these advantages:

1. Makes uniform sticks that are lighter, flakier, and of more friable texture—a decided improvement over the denser, tougher product.

2. Makes 18,400 sticks from 340 lb. of flour, in 4-hr. runs by a 4-man team.

In comparison, only about 9,000 sticks are produced from 300 lb. of flour in hand production by 4 men over 8 hr.

Like so many top-performing units, this machine is relatively simple. And as for the breadsticks it processes, the basic formula employed by Frisco—dough, butter, malt, sugar, and flavor ingredients—differs only slightly from the conventional. But the company applies its own special modifications in mixing, proofing, and handling. End-product is the crunchier quality stick, at greater volume and less cost.

Two men operate the machine. One feeds in dough-billets and special 16-compartment pans. The other removes filled pans and places them on mobile racks, ready for the oven.

Billets are fed continuously. In sequence, each is rolled to proper thickness and width and becomes a continuous dough-ribbon. This ribbon first moves through rolls that cut and form it into 16 continuous, ½-in.-dia. strips. Then 8 of these strips feed into the 8 middle compartments of one of the silicone-coated receiving pans. The other 8 strips feed into the outside compart-

JACK MEYER
FE Special Correspondent, Los Angeles

Medieval Convenience Food

The crunchy rods of bread known as "grissini" were originated during the middle ages in a bakery in Turin, Italy. And being a ready-to-eat product—requiring no further cutting or preparation—these breadsticks may well have been the first convenience food.

As with most other old and familiar foods, the method of making breadsticks progressed through hand-making to machine production, with extrusion the common mechanical means.

Now, however, a salient new departure from this technique is marked with development of the high-performance breadstick forming machine spotlighted here—the Spac unit (La Grissinatrice Spac; U. S. and Canadian distributor: Carle & Montari, Inc., 95 Temple Ave., Hackensack (N. J.).

ments (4 on either side) as the pan exits.

The two compartment separators and both ends of the pan are topped with knife-edges. As the pan leaves it is conveyed under a roller adjusted so that the knife-edges cut the continuous strips to proper length.

Frisco's Spac-made sticks have a special quality of crunchiness. And the significantly higher yield permits a profitable "bonus packing" of 16-17 sticks to the 5-oz. package, instead of the usual 12-13. These are salient sales points.

Ups Distribution

The recent surge of consumer acceptance of factory-prepared convenience hors d'oeuvres and snacks has opened another avenue for sales of Frisco's vari-flavored sticks (onion, garlic, cheese, and "pizza"). And sighting a strong and broad market, Frisco has now expanded its distributor-type sales to 32 states and the District of Columbia. Here, profit margins are fair. Based on cost, the distributor earns 25% and, on sales price, the retailer is able to make 27%.

The filling, presently manual, is soon to be handled by high-performance packaging machines—a bagger and a packager-sealer (Telesonic and Pack-Rite, Pack-Rite Machines Div. of Techtmann Ind., Milwaukee).

—*End*

"The deal on the used multi-head filler was too good to pass up . . . Now it's only a matter of attracting the business."

MUELLER

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ROUND STAINLESS STEEL TANKS
Insulated, with or without refrigeration.

HORIZONTAL STAINLESS STEEL TANKS
Insulated, sizes from 150 through 2000 gallons. With or without heating or cooling coils.

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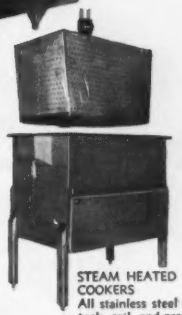
Stainless steel vats with mechanical agitator



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All stainless steel tank, coil, and product basket.

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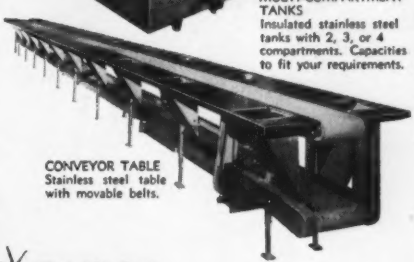

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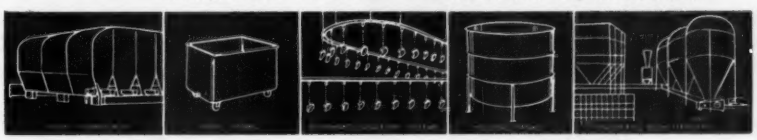
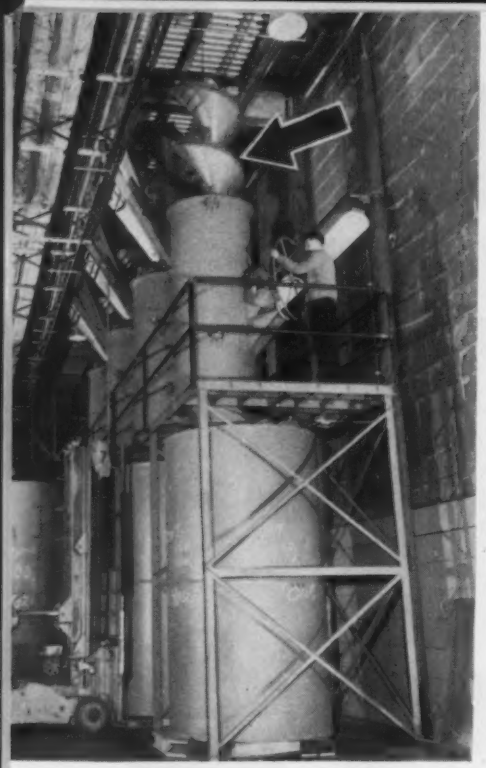
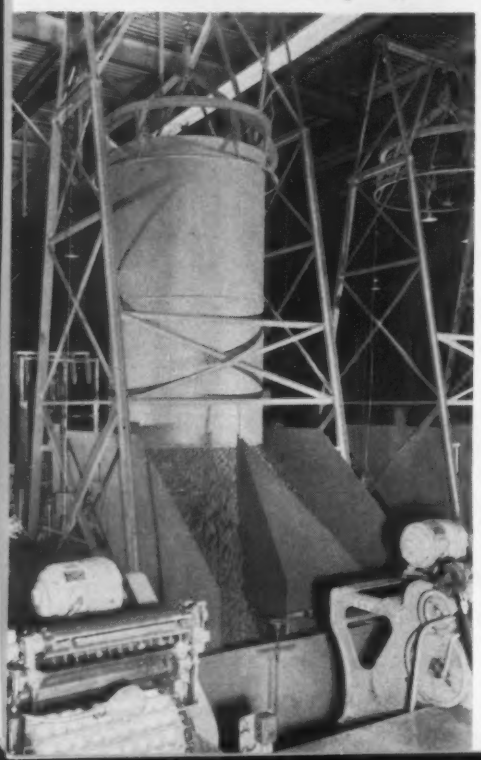




FILLING: Tube-Bins receive nuts from overhead conveyor. Feed unit is spiral chute (arrow), which operator is seen lowering into bin by turning handwheel. To avoid embedding in nuts, spiral is automatically retracted by motor-power as bin fills.

EMPTYING: Filled bin is moved to process by lift-truck, which spots it on pallet-platform of dumping station. Next, operator clamps holding rig to its top. Then hinged platform opens hydraulically and nuts flow to hoppers that feed branders (foreground).



MANUFACTURING

Tube-Bin Slashes Handling Costs

New unit saves nearly 80% of labor that was required by former bag-and-pallet routine. And it ups utilization of costly warehouse space

RELATIVELY EASY opportunities for improvement are still to be found in the sphere of food-plant materials handling. And each advance can add new operating efficiencies and savings.

Diamond Walnut Growers, Inc., Stockton, Calif., knows that these advances stem largely from imaginative engineering. Accordingly, it specifically encourages its engineers to focus their creative abilities on development of better machines, methods, and techniques.

One very impressive advance recently racked up by this philosophy is the revolutionary Tube-Bin handling method for walnuts. It replaces the former system employing pallet-loads of bagged nuts.

▶ The new system more fully utilizes bulk-storage floor capacity—thus permitted the company to drop earlier plans for new costly bulk-storage facilities.

▶ Further, labor costs have been cut nearly 80%—chalking up a savings of 10½¢ per cwt. of walnuts.

Diamond's plant originally was planned to receive more than 1 million tons of walnuts annually. Bulk shipments come by hopper-bottom rail cars. And prior to the change, a considerable tonnage of "merchantable" grade nuts for in-shell packaging was received in 100-lb. bags.

Bulk-shipment nuts, destined to be shelled, are stored in bins, then conveyed to the cracking department. The bags of nuts were stacked, 25 to the pallet, and stored in the warehouse (FE June '57, p. 64).

It was evident that the bulk-nut operation was decidedly smoother and more efficient than the pallet-bag method. Moreover, there was the factor of walnut production rapidly outstripping the capacity of the relatively new facility. So company engineers brainstormed the problem, eventually developing the Tube-Bin idea, which is a miniature of the system used for bulk nuts.

Tube Bins are of 5¼-ft. dia., 10-ft. high (tube 9¾ ft. plus ½ ft. height of pallet), and total empty weight of tube and pallet is 632 lb. Capacity is 5,000 lb., compared to 2,500 lb. of bag-pallet unit.

Floor load capacity is 450 lb./sq. ft. Presently, the Tube-Bin utilizes 324 lb./sq. ft. Plans are to replace pallets with fixed, metal bottoms for tubes which, by saving floor space that has been required for the pallets, will increase floor load to 473 lb./sq. ft. per Tube-Bin.

Here's how this development cut handling costs by 10½¢ per cwt.:

Based on continuously handling 40 tons/hr. of nuts (8-hr. day), a cost analysis showed that bagging the nuts, then subsequently dumping these bags cost 13¼¢ per bag, whereas the total cost of filling and dumping Tube-Bins runs but 2$\frac{7}{10}$¢ per cwt.—winning the reduction of 10½¢ per bag.

Most of this saving is involved in labor released to other plant jobs. To sack and later dump bags demanded 33 men, in contrast to the Tube-Bins requiring a crew of only 11 men. Filling time for a tube is 3¾ to 4 min.

The 4-station Tube-Bin filling operation is located directly below the plant feed conveyor (50 tons/hr. max. capacity). Nuts are supplied to this conveyor from bulk-bin storage or directly from rail cars of 40,000-75,000 lb. capacity. Cars are spotted over collection-hoppers by Trackmobile.

Each station is equipped with a

J. H. WEST and C. R. HAVIGHORST

Engineer, Diamond Walnut Growers, Inc., Stockton, Calif., and Senior Associate Editor, "Food Engineering"

IMITATION RASPBERRY BY FIRMENICH

You get the direct and authentic reproduction of raspberries in their full perfection in Raspberry Flavor by Firmenich. For Firmenich took fully ripe raspberries, freshly severed from the stem, captured their delicate and fugitive flavor, and by original research reconstructed it with all its significant and desirable components. Firmenich Raspberry comes to you as a precise and potent flavor material of the utmost purity and stability to enhance the flavor of your products and to give them greater sales appeal. Samples and technical data on request.

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No. 4 in a series of Hoerner corrugated shipping container experts

THIS IS THE HOERNER SPECIALIST FOR PACKAGING TINY THINGS

Very little objects can often cause very big shipping problems. But not for Hoerner experts. Their experience in packaging Lilliputian products puts them in good stead. If you manufacture tiny things, and if your packaging and shipping costs are too large, contact the Hoerner office or plant nearest you. A Hoerner Packaging Engineer will bring your costs in line with your product.

HOERNER BOXES, INC.

Corrugated Specialists for Mid-America

GENERAL OFFICES— *600 Morgan St., Keokuk, Iowa* • **PLANTS**— *Keokuk, Des Moines and Ottumwa, Iowa Sand Springs, Oklahoma • Minneapolis, Minnesota • Fort Worth, Texas • Sioux Falls, South Dakota Fort Smith and Little Rock, Ark. • Affiliate—Cajas y Empaques Impermeables, S. A., Mexico City D. F., Mexico*

retractable spiral chute, sheathed in a cylinder equipped with roller-bearing guides. This 500-lb. chute is partially balanced with a 400-lb. counterweight. It is manually lowered into a Tube-Bin by a handwheel.

One man operates this filling station. He adjusts a plow on the main conveyor to divert nuts into a chute that discharges into the spiral chute at the top of its enclosing cylinder. The spiral is lowered to within 18 in. of the bottom of the Tube-Bin and, when filling begins, the motor is actuated by pushbutton. It automatically elevates the spiral at a rate that keeps it 12 to 18 in. above the rising surface of the nuts.

When withdrawn from the filled bin, spiral contacts a switch that shuts off the motor and flashes a green light to warn the lift-truck driver to remove the bin. Simultaneously, the operator closes the plow leading to this bin and opens the plow to the next one. Thus a continous filling is maintained.

Bins are delivered to dumping station by lift-truck (6,000-lb. capacity). They are placed on a hydraulically operated, hinged, pallet-platform. The single operator of this station (which can handle 5 bins) first lowers the tube-holding device. It is equipped with hooks that grip the top rim of the tube, to hold it vertical during unloading. Cable of the holding device is then tightened and locked by a ratchet winch.

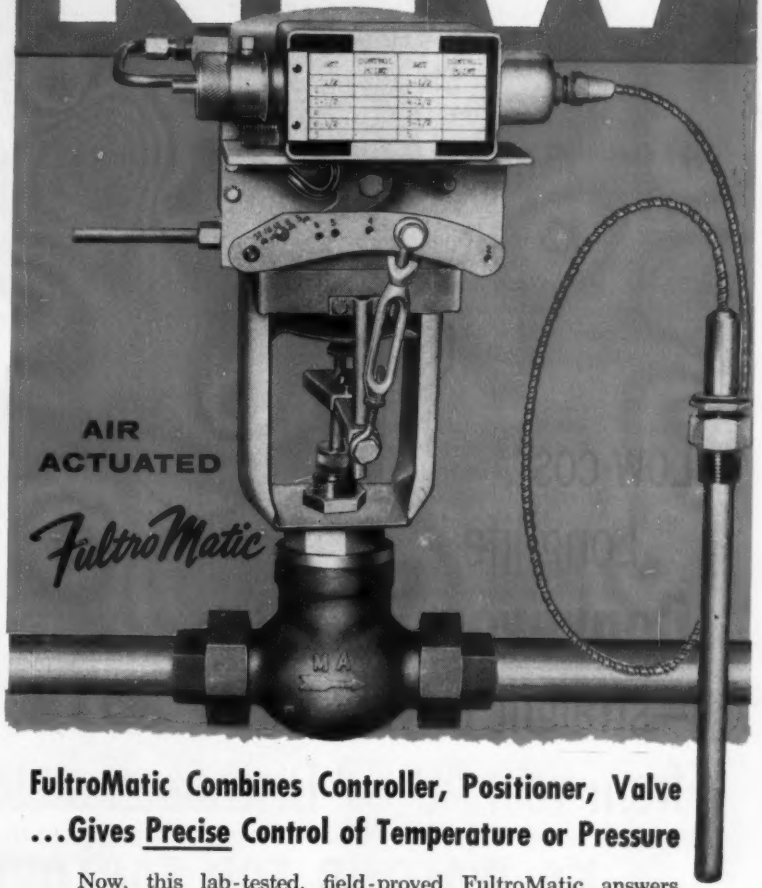
Next, the pallet-platform is hydraulically swung open and nuts cascade out. They go into hoppers, from where they feed to Diamond branding machines (bank of 10, capacity 75,000 lb./hr.). During a 20-min cycle, the operator dumps a bin every 4 min., to supply the total volume required by the branders.

Before an emptied Tube-Bin is removed, the pallet-platform is closed and the holding device is freed from the top. —*End*

"Our contest rules read, 'All entries become the property of the company'—Dammit!"

NEW

3-in-1 Controller at One-Half the Cost!



FultroMatic Combines Controller, Positioner, Valve ...Gives Precise Control of Temperature or Pressure

Now, this lab-tested, field-proved FultroMatic answers today's precise control requirements with multiple features never before available in one unit . . . *at about half the cost of two- and three-unit systems!*

- **Improved accuracy** with smaller, faster-responding element.
- **Positive valve positioning** by feedback action; no overshoot.
- **Adjustable proportional band** easily changed on the job.
- **Simplified settings** with knob, indicator, arbitrary scale.
- **Field reversibility:** control action quickly changeable.
- **Easy to install:** place valve in position, mount bulb, connect air.
- **Low maintenance:** rugged design for trouble-free service.

FOR COMPLETE FULTROMATIC SPECIFICATIONS, WRITE FOR BULLETIN PG-755

Mr. Controls

Robertshaw-Fulton CONTROLS COMPANY

FULTON SYLPHON DIVISION • Knoxville 1, Tennessee

INDESTRUCTIBLE
SLAB CONVEYOR BELTING

TWICE THE QUALITY OF OTHER SLABS— YET THE COST IS THE SAME!

Low-cost, Long-life **Conveyor Belting** —straight to you from your "U.S." Distributor's stocks—

NO WAITING FOR FACTORY DELIVERY

U. S. Indestructible® Slab Belting is the low-cost belting especially suitable for a wide range of uses by industry. It is the right belt for light assembly line work and horizontal (and slight incline) package material handling. Your "U. S." Distributor cuts the conveyer belting slab to the size of your conveying equipment, and delivers it to your plant without delay.

U.S. Indestructible Belting is the long-life belting because it is made of flexible *natural* rubber, with thick coatings of supple natural rubber between flexible sturdy duck. The belt is orange-colored, with friction surface and skims. It has much higher adhesion than any other slab, yet costs no more. It fits the smaller pulleys of package handling equipment.

Contact your local "U. S." Distributor or use the coupon below.

United States Rubber
Rockefeller Center, New York 20, N. Y.

I convey the following materials_____
Please have your field representative call upon me to examine my conveyor belting requirements.

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WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

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LOST TIME ACCIDENTS
LAST YEAR
THIS YEAR
WHO WILL BE THE NEXT VICTIM?
DON'T LET IT BE YOU!
TO DATE
TO DATE
THIS PLANT HAS WORKED 29 DAYS SINCE THE LAST LTA
Your Entire Future Depends on Your Safety Today

Safety Is a State of Mind

In an effort to make workers more aware of safety, we have used this LTA board (photo) with two clocks which record the number of accidents in '57 and '58. Dial marked "Last Year" is for '57, and that marked "This Year" represents number of accidents that had happened from Jan. 1 up to Dec. 31.

Time has run out for workers whose accidents are recorded on the dial of "Last Year". They learned the hard way that, "Your Entire Future Depends On Your Safety Today". The copy beside "This Year" dial (right) is aimed to make luckier workers aware that safety is a state of mind. Warning between the dials, socks home this message. Accident frequency for '57 and '58 was about equal. But, since putting up the board, we've noticed a marked reduction.—*Swift & Co., Kansas City, Kan.*

'Injured' Dummy Aids Safety

This mannequin (photo) dressed in a complete employee's uniform, is an important part of our safety program. It stands near accident toteboard at plant entrance.

For every plant personnel injury, a heavily Mercurochromed bandage is placed where the real-life injury was suffered. Bandages accumulate during the year, are effective and, for some, painful reminders of the number of accidents and the parts of the body most often involved.

During three years of the program our accident rate has dropped steadily: In 1955-56 there were 148 accidents; 1956-57 (first year of program) 48; 1957-58, 33, and in 1958-59 (fiscal year ends Aug. 31) there have been 20. Cost of this 6-ft., 35-lb., mannequin is $70.—*H. W. Lay & Co., Inc., Atlanta, Ga.*

Tube 'Pallets' Protect Bags

Paper tube "pallets" greatly reduce bag damage formerly occurring from splintered pallet-decks or from snagging by pallet corners when loads are moved between stacks.

The 30-in. long tubes (arrows in top photo) are salvaged from newsprint cores. Loads are handled by a lift-truck equipped with a five-tine fork attachment. Tines, 2-in. dia., 30-in. long, rounded on ends, are welded to an adapter plate on 8½-in. centers.

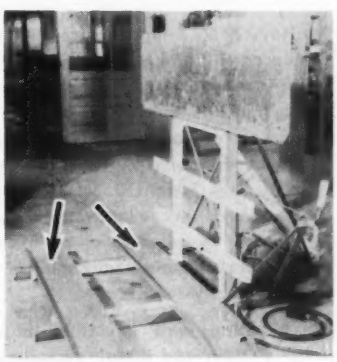
For manual loading (15-18 bags) the five paper tubes are placed in a wooden jig (bottom photo) which holds them firmly. Weight of load conforms bags to crown of tubes, preventing rolling or slipping, thus retaining load alignment in storage. Loads are stacked 3 to 4 pallets high. —*F. E. Staff.*

Nose Is Best Fire Detector

Smoke has distinctively characteristic odors. With training, guards and watchmen can instantly tell whether it is from burning wood, paper, rubber insulation, etc. And, knowing what's burning, enables the guard to get to location long before automatic detection devices sound an alarm.

Value of an alert olfactory can be fully appreciated when the fireman's rule of thumb is recalled, "first 5 min. at a fire are worth next 5 hr."

Careful observation by the guard on his first tour of duty sets the stage for most efficient use of the olfactory. Characteristic odors of plant, materials and processes, should be carefully noted so any foreign smells can be singled out.—*Pinkerton's National Detective Agency, Philadelphia.*



Hydraulic Tank-Tipper Cuts Dumping Time

Under normal manual operating conditions, it requires 5-7 hr. to unload the equivalent of 1,000 boxes of ice-chilled poultry from tanks. But only 2 man-hours are required to empty the same quantity with the hydraulic tank-tipper shown above.

Tanks are rolled onto a set of runners (arrows) similar to those of an auto grease rack. When positioned and secured, a hydraulic lift rotates

NON-UNIFORM FOOD PRODUCTS

NO PROBLEM

for the new **HAYSSEN RT**

The World's Most Flexible Automatic Packaging Machine

The Hayssen RT brings the economies and conveniences of automatic packaging to the food industry where other machine methods have failed. A new method of independently forming the package around the product allows the RT to package uniform and non-uniform products with equal success. Spaghetti, celery, licorice sticks, cheese, even meat can be wrapped rapidly without the use of u-boards or other support. For better, more economical packaging of your product, see the Hayssen RT.

The RT brings new flexibility to packaging. Height, width and length changes are made quickly and easily without the use of change parts. Any heat sealing material can be used, including unsupported polyethylene. For complete details, write Hayssen today.

SPECIFICATIONS

Range:
Min. Width — 1"
Min. Length — 5"
Max. Width — 12"
Max. Length — 12"

Size changes made without use of change parts.

Sealing Head Types:
Impulse sealing for polyethylene and other plastic films; resistance types for coated or laminated material.

Speed:
Variable. 20 to 150 packages per minute depending on package length and material used.

Feed Types:
Magazine, flight infeed conveyor or hand feeds available.

Specifications subject to change without notice.

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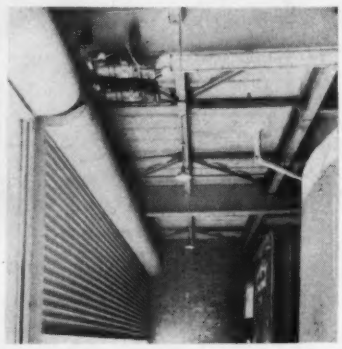
Practical Ideas

tank in a 114-deg. arc, sufficient to cause poultry to slide out of tank.—*Agr. Marketing Service, USDA. Washington, D. C.*



Giant-Door Problems Solved

At Mars, Inc., Chicago, lack of side-room for four 48 x 15½ ft. rolling steel doors prompted mounting push-button controlled, 5-hp. motors in pairs, to the structure's roof beams.

Chain drives were lengthened, too, to permit installation of 30-in. dia. hoods, in which doors roll out of sight.

The high wind problem was overcome largely through weight (4830-lb.) of each door, and its extra rigidity and strength. Besides being a heavier gage steel, each door slat is 6-in. wide, has a higher crown at its apex, which adds rigidity.—*The R. C. Mahon Co., Detroit, Mich.*

Check-Points for Sprinklers

Here's a 7-point check list to insure operation of your plant's sprinkler system.

1. Shut-off valves must be kept open. If there's no automatic alarm to detect this, closed valves should be immediately reported.

2. Air pressure: Proper pressure insures water flow from pressure tanks,

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We'll pay $5 to $15 (sometimes even more) for each item used.

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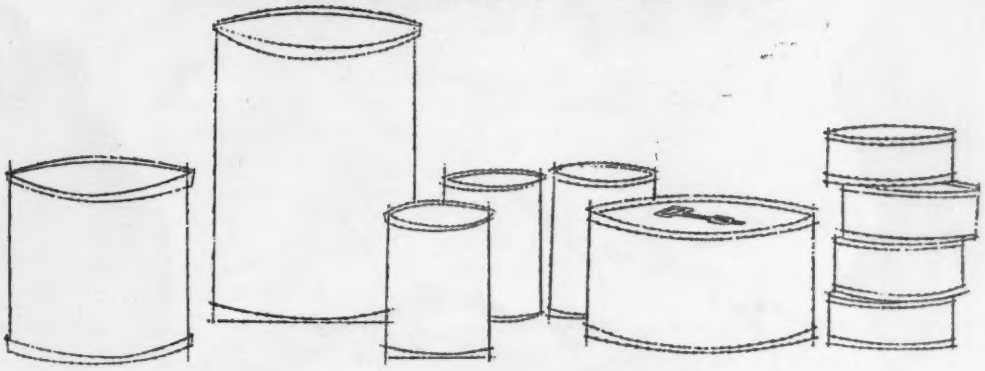
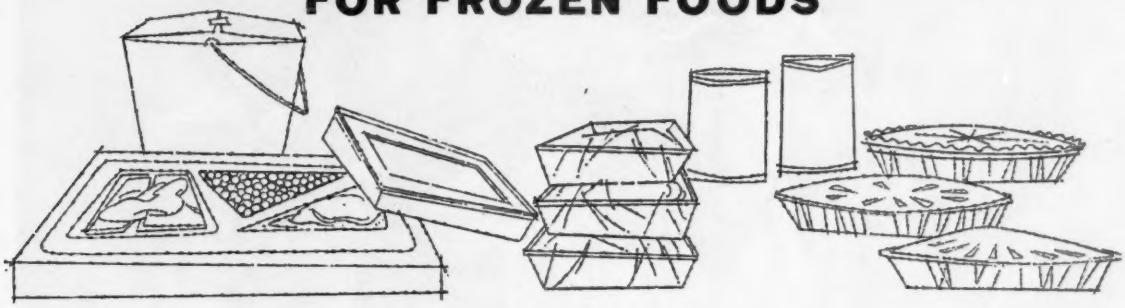
Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.

FOR CANNED FOODS



FOR FROZEN FOODS



A New taste WITH COL-FLO SPECIAL STARCH

It's a more appetizing, natural taste. Easy-to-detect. And easily obtained with COL-FLO, a hard-to-believe, short textured starch from National.

COL-FLO preserves the natural flavor of thickened or stabilized foods. Canned or frozen. It never imparts an undertone of cereal taste. Never interferes with natural flavors. Too, it doesn't cloud natural colors between processing and eating. A crystal clear glossiness highlights your food product.

COL-FLO also safeguards and improves stability. Liquid separation tests show far greater resistance to breakdown than wheat flour or other waxy starches.

FREE TASTE TEST. We'd be glad to send a sample of COL-FLO for comparison. The test is simple. Just prepare identical solutions of COL-FLO and any thickener you're using in juice, water or any liquid. Then taste the difference! Sound interesting? Write, telling us something of the use you have in mind.

FOOD DIVISION
National
STARCH and CHEMICAL
CORPORATION

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CIRCLE 79 ON READER SERVICE CARD

LEADERSHIP...

The white stallion leading his band to greener pastures symbolizes the attributes of leadership . . . alertness, strength, intelligence and initiative.

Mikro-Products has established its reputation for leadership through continuing development work and extensive experience in the fields of grinding, air conveying and dust collecting. The Mikro Plan was created specifically to meet the production demands of the processing industries.

The comprehensive Mikro Plan meets the requirements of customers all over the world. It includes: MIKRO ENGINEERING, which creates equipment for new uses, and improves existing methods of processing; MIKRO LABORATORY ANALYSIS, available on call to devise more effective methods of processing the customers' materials; and world-wide MIKRO SERVICE, for on-the-spot solution of problems.

Genuine Mikro replacement parts are shipped within 48 hours of receipt of the order.

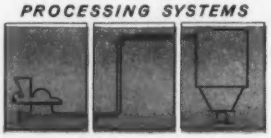
MIKRO PLAN facilities are at your disposal without obligation. Call on us at any time.

MIKRO-Products

Pulverizing Machinery Division • Metals Disintegrating Company, Inc.
97 Chatham Road • Summit, New Jersey

SPAN THE GLOBE

PROCESSING SYSTEMS



GRINDING CONVEYING COLLECTING

REPRESENTATIVES throughout the United States, Continental Europe, British Isles, Canada, Mexico, Central and South America, West Indies, South Africa, India, Japan, Philippines, Australia and New Zealand.

MANUFACTURING FACILITIES: United States, Canada, Continental Europe, British Isles.

prevents tripping of dry-pipe systems. Report excessively high or low pressures.

3. Steam pressure must be maintained for engine driven fire pumps. Report gage readings when below required minimums.

4. Power supply: Check circuits and fittings of supply for electrically driven fire pumps.

5. Water level: Where gravity tanks are source, required level must be maintained.

6. Water temperature should never drop to freezing point. Use automatic alarm, also check heating apparatus regularly.

7. Don't pile merchandise so high that it may impair system's ability to douse fire.—*Pinkerton's National Detective Agency, Philadelphia.*

Monorail Gives 5 Pluses

This monorail cable conveyor, featuring forks that convey empty boxes to poultry packers in a continuous procession, has brought these five advantages:

1. Lids need not be closed for transport.

2. Box makeup room can be remote from packing area.

3. Since overhead space is used, floor space is freed for other operations.

4. Conveyor acts as reservoir for boxes, assuring ready supply to packers.

5. Single conveyor can supply more than one packing line.—*Agr. Marketing Service, USDA, Washington, D. C.*

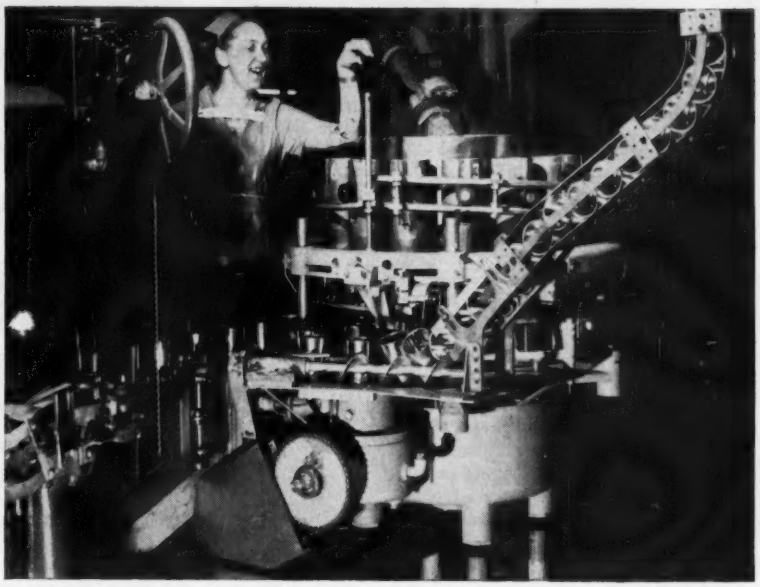
PRACTICAL TIPS

To obviate company liability, as in cases of accident, assault, or the like, caused by trespassing persons, use "No Admittance" signs. Such postings prove unauthorized people to be intruders. In addition, prohibit entrance of anyone lacking management clearance as recognized business representative or visitor.—*Bul. N. Y. State Canners & Freezers Assn.*

FLUIDICS

is a PFAUDLER PERMUTIT program that provides a modern, imaginative approach for handling and processing more profitably the liquids and gases involved in

- blending
- agitation
- heat exchange
- distillation
- water treatment
- centrifuging
- filling
- evaporation
- corrosioneering
- storing
- drying
- waste treatment



FLUIDICS AT WORK

How to fill 300 c.p.m. of applesauce with accuracy

This fourteen-station Pfaudler rotary piston filler at Silver Shore Co-op Inc. fills 280 to 300 cans a minute with applesauce to ±1/10 oz. accuracy.

Other Pfaudler fillers can give you the same accuracy at speeds up to 1050 cans a minute, depending upon product.

Simplicity of design. The RP-14 filler shown here is designed to give you uninterrupted filling at full production speeds. It has a no-can-no-fill mechanism, so essential to a tidy packaging line. There are only four primary moving parts—valve and piston roller, valve trip cams, and wear pads on the valve locks. All four are durable, low in cost, easy to replace.

Versatile. With the RP-14 you can handle tin, glass, or composition containers from 202 to 404 diameters in various heights.

You can also use this filler for berries, citrus fruit concentrates, baby foods, fruit purees, fruit sauces, preserves, syrups and toppings, tomato paste, dairy products, even dog food—*all with accuracy.*

Twenty minutes to clean. It takes one man working without tools just twenty minutes to clean the RP-14 thoroughly.

For more information, just write for the bulletin on rotary piston fillers to our Pfaudler Division, Dept. FE-89, Rochester 3, New York.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . . the science of fluid processes

CIRCLE 81 ON READER SERVICE CARD 81

VERSATILE INFRA-RED UNIT (I-R Moisture-Matic Balance) can test wide variety of products, doesn't require a technical operator. Here, moisture content of steeped barley is checked in malthouse application. Both time and trouble are saved by use of rapid, accurate instrument directly in production area.

ELECTROPROBE-TYPE TESTER is used by Curtiss Candy Co. in specific line routine—speedy and efficient checking of moisture in marshmallows before they get OK for shipment.

Striking Advances in 'On the Line'

Jiffy checking instruments—chemical, RH, infra-red, and electronic—now quickly probe out and apply the working data. Thus skirted are slow lab tests, which too often 'gave the answer after it was all over'

VITAL in food quality control is moisture testing—beginning with checks of raw materials, continuing with products-in-process, and extending to finished goods.

These determinations are fundamental in keeping products within quality specifications. The numerous difficulties encountered when moisture content runs over or under—including losses of product, time, labor, money, and customer goodwill—are only too well known to processors.

Accurate moisture tests key processing operations and control: Proper moisture (13%) is essential in wheat for good milling and best flour . . . So, too, with popping corn (13.5%) for optimum popped volume . . . Molding starch must be at the right level (5-6%) for proper, non-sticking operations with confections . . . For optimum quality and shelf-life, marshmallows and caramels must be kept to specific percentages . . . The same, too, with cake mixes, cottage cheese, instant milks, coffees, potato chips, crackers, cereal doughs—and many more products.

Packaging materials also call for moisture testing and storing under humidity-controlled conditions. For, when too dry they shrink and tear easily, and when too moist they become difficult to handle on the machines.

• Here, we'll spotlight the great advantages of direct production-line moisture checks. How such advanced operational testing has now been engineered will be detailed, with close focus on the latest instruments. Our illustrations depict a number of the installations, specifically highlighting exemplary cereal, confection, and meat applications.

Lab Tests Too Slow

Much earlier research was directed toward improving analytical methods. Initial practices were based on a drying procedure—present moisture determined as sample's weight loss when dried under standard time, temperature, and pressure conditions.

Many plants still endorse this approach, since results are accurate and reproducible on a routine basis. Other physical-chemical methods have also proved reliable. However, they require trained technical personnel, entail much time, and can be expensive in terms of equipment.

Granted, such careful lab checks are accurate. But in streamlined food production the time factor is vital. Moisture content must be measured instantly and continuously in any plant that receives and processes food materials in high volume.

It's small aid to a production manager when the control-lab people tell him—after long hours of testing—that his last run of marshmallows contained a little too much moisture (pinpointed to several decimal points). Given line-check facilities, he'd be happy just to know the running content within 0.2%—which would allow him to keep his product inside proper percentage limits.

In short, too much production goes by before getting lab results. And recycling or scrapping of product is expensive.

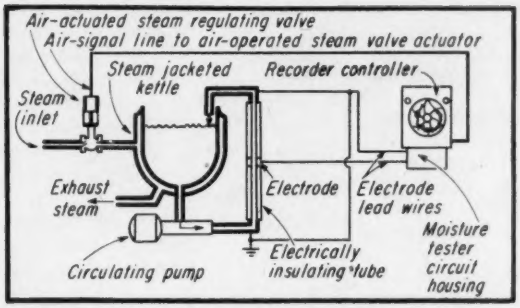
For perspective of the problem, a review of the lab methods is pertinent:

1. **Vacuum oven**—Highly accurate,

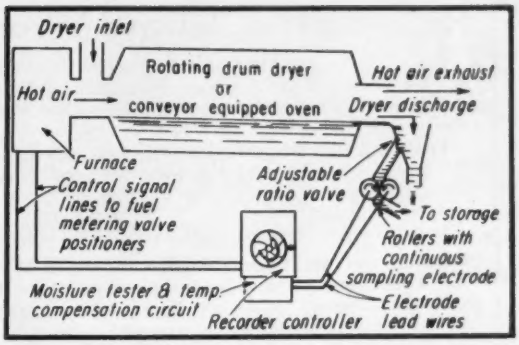
ROBERT R. MOORE and JOHN V. ZIEMBA

President, Moore-Milford Corp., Skokie, Ill., and Associate Editor, "Food Engineering"

Focus on 4 Working Setups



ELECTRIC-SIGNAL SETUP is used in moisture checks during continuous drying of granular materials. Signal via electrode automatically adjusts temperature or speed of belt traveling through dryer. Frequently, facilities are provided to add back measured amounts of water to product.



CONTINUOUS SYSTEM provides automatic sampling and moisture testing in batch work—as processing of a viscous meat extract. Here, measuring electrode is mounted in closed, circulating loop hooked to each vacuum pan. Measurement is automatically corrected for temperature and used to control cooking cycle and solids content of product.

Moisture Control

but requires most expensive equipment. Takes a minimum of 6 hr. Should be carried out by graduate chemists for best reproducibility.

2. Forced-draft oven—Takes 3 hr. or more running at 110-115C. temperature. Almost as accurate and consistent as vacuum technique.

3. Air oven—Provides results in 1-2 hr. at 125-135C. Generally a little lower on scale of accuracy and reproducibility.

4. Azeotropic (toluene distillation)—Results in about 1 hr. Generally not as accurate or reproducible as oven methods. Requires toxic and flammable solvents.

5. Titration, Karl Fisher reagent—Can be run in about 15 min., but requires high skill to get consistent results. Best for heat-sensitive, dry materials. Instability is problem with solutions, which must be fresh to obtain proper accuracy. And here expense runs up.

Many factors influence proper choice among these methods. Each, of course, produces different results on any one material. It's obvious, therefore, that no single, rapid-type instrument could give results similar to all analytical methods.

However, makers of moisture instruments have sought to build flexibility into them so that their readings afford comparability with other methods.

And a specific aim has been to keep the devices simple enough for non-technical personnel to operate.

Rapid Moisture Testers

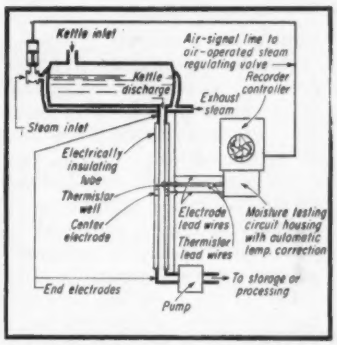
Decided strides have been made in this direction. Available are many simplified moisture-testing instruments, and more are on the way.

Some are specific in their application, while others are suitable for checking many different products. There's no single, speedy moisture tester that can be calibrated for all products, since electrical and chemical properties of materials cover too wide a range. Also, the more general or flexible an instrument, the more sacrifices must be made in test speed.

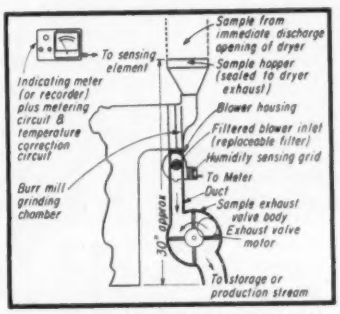
In making a selection, then, the processor must first weigh 'general' instruments (that take several minutes to moisture-test each of a wide variety of products) against 'specific' instruments (that require only seconds to check each of a few specific products). He must next determine whether individual sample testing or continuous-stream measurement will best fill his bill. Now let us consider the—

4 Main Instrument Types

1. Chemical—This kind of unit (not in extensive use) usually involves pressure measurement of an



ELECTRODE IN DISCHARGE (rather than closed-loop sampling) is system for continuous cooks of such goods as fudges and caramels. Checks at kettle out-flow directly gage moisture content of product and provide control either by adjusting kettle temperature or discharge rate.


Sample from immediate discharge opening of dryer
To sensing element
Sample hopper (sealed to dryer exhaust)
Indicating meter (or recorder) plus metering circuit & temperature correction circuit
Blower housing
Filtered blower inlet (replaceable filter)
Humidity sensing grid
To Meter
Burr mill grinding chamber
Duct
Sample exhaust valve body
Exhaust valve motor
30" approx
To storage or production stream

HUMIDITY-SENSING UNIT plays role in non-stop moisture testing of spent brewer's grains. Finely ground grains are passed through closed air circuit, where small amount of flow is drawn off and directed over humidity-checking element. Measurement is used to adjust drying operation.

Righting the 'Always Wrong'

Pity this poor baker. His company president walked past the oven and told him his crackers were too brown. Then after he cut oven temperature and upped speed of the belt, the vice-president came along and cautioned him about baking the crackers too light.

Frustrated, the baker pushed his oven heat back up and started re-adjusting belt speed, only to be told by the plant manager to get more salt on his crackers. He then gave them a lower bake, increasing the moisture content to pick up more salt.

In doing so, however, he was back to light-baked crackers!

▶ But this was a smart baker: He got into a huddle with his bosses—told them they'd better supply him with a moisture tester or lose a good baker.

He got the tester. And he now checks moisture content of his crackers right on the spot, precisely adjusts his oven—and consistently gets top-quality bakes.

expandable gas. Here, a chemical (calcium carbide) reacts with sample's moisture to produce a gas (acetylene) within a portable bomb fitted with a pressure gage that's calibrated in percentage moisture and based on a specific sample weight.

2. Relative humidity—Type that's gaining in popularity and importance. Simply measures RH in close proximity to sample (accurate check of air around product in an enclosed body to eliminate influence of ambient air currents). Employed is either a sensing element hooked to an electric circuit or a wet-and-dry-bulb thermometer with test solutions. RH reading is converted to percent moisture by chart or dial.

One of the more advanced instruments employs a humidity-sensitive semi-conductor (see drawing of unit that checks spent brewer's grain) with measuring circuit's dial calibrated to percent moisture for direct reading. It permits rapid, reasonably accurate readings, either continuously or batch-wise, on products that are extremely dry or whose electrical properties don't correlate with moisture content.

Semi-conductor type instruments are the most direct for measuring RH at lowest cost.

In contrast, other instruments actually remove moisture quantitatively from a sample. Water is absorbed by a chemical (phosphorus pentoxide) between two electrodes, with moisture content measured on the basis of amount of electrolytic current. While these instruments are adapted to continuous applications, expensive auxiliary equipment is needed to maintain constant pressure and other sampling conditions. What's more, they require highly trained personnel and are only suitable for extensive testing of a single valuable product.

3. Heat loss (infra-red)—These units are equipped with built-in balances, with samples weighed before and after heating (as in standard-oven procedures). Most balance controls are calibrated in percent moisture instead of units of weight. Instruments can be operated by non-technical personnel. Most require manual balancing and shut-off immediately at end of heat cycle. Otherwise, errors are introduced by either overdrying or by moisture regain.

One instrument has a sequencing timer and motorized balance, and requires no operator attention after sample loading. Percent moisture is automatically displayed on a digital counter. It's retained until canceled by operator prior to next test.

Infra-red units have proved the most flexible, handling a wide variety of products with little need of calibration. Results are usually available within 15 min.

Older units usually use glass infra-red lamps, while newer ones utilize metallic infra-red elements. Glass bulbs emit relatively small amounts of "near" infra-red only. Metallic units, however, emit large amounts of "far" infra-red, which is almost completely absorbed by sample to permit more rapid, uniform drying.

4. Electrical and electronic—A variety of instruments fall under this heading. They measure conductivity, dielectric constant, power absorption, etc., which in many materials vary with moisture content. Such units are initially calibrated against samples of known moisture content. This way, a given value of sample's electrical property represents a given quantity of moisture.

These units have a test cell and an electrical measuring circuit. Function of cell is to place sample under an arbitrary set of standard-conditions for each test.

For granular materials, mainly two types of test cells—gravity fill and pressure—are used. Most units employ the gravity cells (rectangular or annular) wherein weighed samples are dropped. The gravity cell's measuring electrodes are constant-spaced thus tend to be inflexible. Complete calibration and correction charts are required for each material or formulation change. Units are extremely sensitive to errors due to variations in particle size, bulk density, and temperature and pressure changes.

A few instruments contain cells utilizing moderate pressure (2,000-4,000 psi.), and these have afforded some success in overcoming the problems. However, only one employs sufficient pressure (up to 15 tons) to be completely effective while still remaining fully portable. It's extremely flexible, since recalibration involves only small variations in compression settings, thus formula changes are easily accommodated. High pressure also permits semi-instantaneous tests on cold or hot products and use of a single built-in calculator (to eliminate separate correction charts).

For semi-solid materials (pastes or liquids), probe electrodes provide reliable readings without use of pressure, since these materials don't present the same problems of homogeneity as do granular ones. Probes either penetrate or are immersed in product and can be employed for continuous or batch testing.

Circuits used to measure electrical properties across the test cell are numerous and, depending on efficiency of test cell, are reasonably good.

Null-balance bridge circuits aren't too popular, since they demand manual balancing for each test. Capacitance is okay for some materials, but unsuitable for others due to difficulty in producing stable circuits. Many circuits are limited from a practical standpoint to "mid-range" moistures. Conductivity is the most popular type, since it's completely stable and can be readily modified to expand testing range or compensate for ionization and polarization effects.

These electrical instruments, which are relatively modest in price, rapidly handle a large amount of routine samples. They are ideal for processors who do not have a great variety of products to test. Bakeries and confectioners fall into this group.

Also available are some costly and highly sophisticated units like the nuclear magnetic resonance instruments, which call for highly trained technical personnel. —*End*

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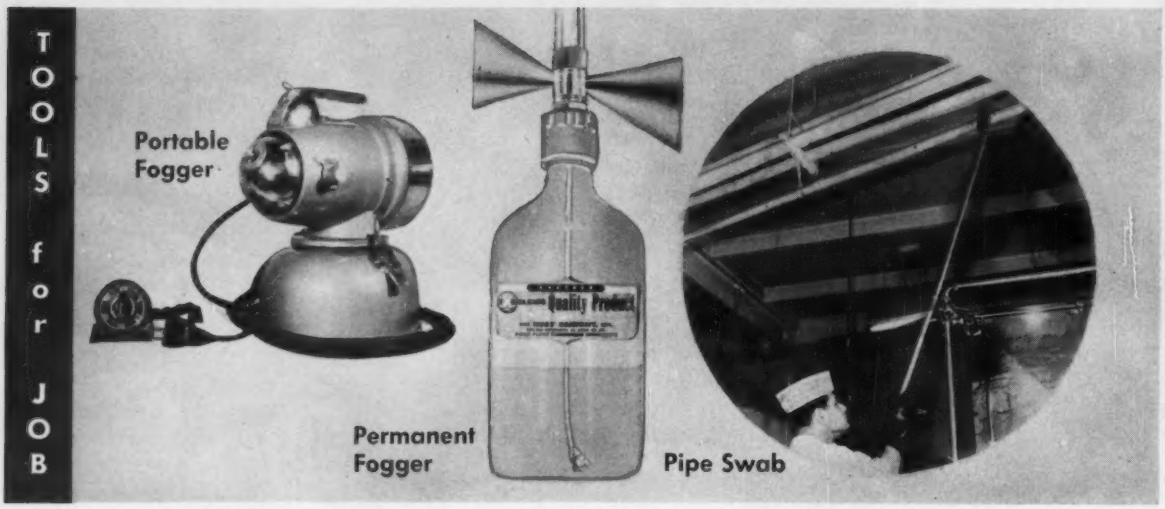


WITH ASSISTS FROM THESE TOOLS the in-plant fight against flies can be waged successfully. Important, however, is

6-Point Program Assures

FLY CONTROL in 1959 must be more thorough than in past years.

The program must use methods and materials designed specifically to combat the immunity factor—the increasing ability of house and blowflies to resist many previously effective insecticides.

It must emphasize killing the pests outside the plant, and depend on adherence to the following 6-point full-scale control program:

▶1. Eliminate all breeding sites near plant.

▶2. Kill fly eggs and larvae in these sites.

▶3. Use dry and liquid baits to kill adults outside plant.

▶4. Prevent entry to plant by proper screening, self-closing devices, and air curtains.

▶5. Use residual insecticidal sprays in non-food processing areas.

▶6. Space spray or fog insecticides in processing areas when exposed food and equipment are protected.

In recent years it has become necessary for a food plant to drastically change and adjust its fly controls with each succeeding season.

There are two basic reasons: (1) The new chemicals that become available each new year, and which should be added to the control program; and (2) increasing ability of flies to build up immunity or resistance to many of the formerly efficacious insecticidal chemicals.

In fact, the term "resistant flies" could well be altered to "immune flies." For these pests have literally developed the ability to expose themselves to certain insecticides without being wounded—being actually totally unaffected. They seemingly take the chemical into their bodies and change it from a toxic substance to a non-toxic one. Accordingly, subsequent generations include more and more immune or resistant members.

T. H. HUGE'

President, The Huge' Co., Inc., and The American Sanitation Institute, St. Louis

Presence Draws Penalty

Food processing plants must keep flying insects out of their buildings —particularly the processing areas where they can contaminate food products.

For FDA takes the position that it is not necessary to prove presence of insects or insect fragments in the food product itself. It is only necessary to show their presence in the plant—meaning they *could* contaminate the product. This alone makes the plant actionable for regulatory penalty.

Flies, much more than many other types of common food-plant insects, are a serious potential avenue or vector of disease. Their presence automatically entails money expenditures by management to eliminate them.

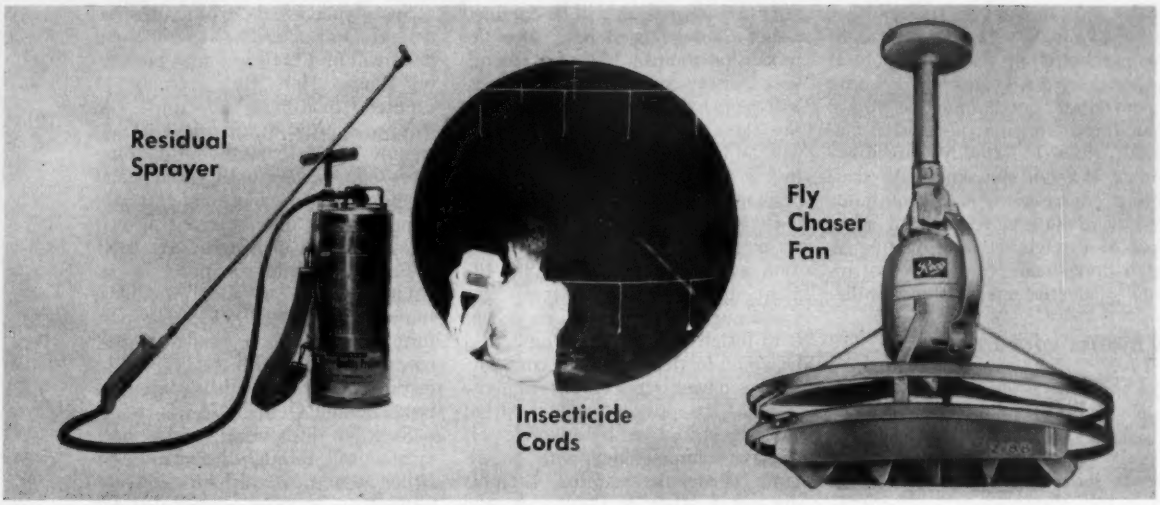
Regulatory inspectors and sanitary consultants consider flies in food processing areas as an index of poor sanitation — meaning management either has no sanitation program or has one showing serious faults.

Such weaknesses are indicative of even more serious sanitation hazards. In short, if a plant manager will allow flies in proximity to food production lines, he will be equally negligent in controlling other factors of sanitation.

So food processors must keep fly populations at a minimum, both inside and outside the plant. Latter is mentioned because, if thousands of live, adult flies are swarming on the plant dock, it's almost a foregone conclusion that some will get into the processing area and thence into the food itself.

Methods Must Be Safe

To achieve fly control, however, it is important that the methods,



outside control of breeding sites through consistent application of proper baits and sprays.

Fly-Free Plant

Resistant insects and stringent FDA attitude pose tough problems. But new chemicals, improved methods, and special tools give you wherewithal to lick them

materials, and tools utilized be effective in relation to insect kill. They must also be safe from the human toxicity and food contamination standpoint.

Control is easy with use of very virulent poisons, which sometimes are cheaper than the safer insecticidal chemicals. But here it must be achieved by relatively safe insecticides that will not contaminate the product. Similarly, the plant manager must not overlook his responsibility to see that the tools used, will not be harmful to the operator, particularly from a cumulative standpoint.

In short, there are insecticides and methods of applying them that are relatively safe. Although they might require more frequent application, or cost slightly more than some of the deadlier poisons, they certainly offer better overall protection and can readily accomplish complete control when used properly.

Outside Control

Breeding sites. Staining of flies to check their movements has proved that the vast majority of adults gaining access to processing areas have been bred in the immediate vicinity of the plant, usually right on the plant's own premises.

First step, therefore, should be seeking out these sites. They are usually damp, nutritive spots where manure, milk or food spillage, garbage, etc., has accumulated. These may be either in the ground or driveway, in low depressions, or trash areas.

Once these areas are found (by presence of the small, white fly larvae usually just under the surface), they can be entirely eliminated, or at least treated to kill off the eggs and larvae. They can be abolished by covering or protecting the garbage or trash disposal area from adult flies, providing better drainage, better paving, and the like.

The areas can be treated or controlled by typical larvacide-type insecticides, which are water miscible and applied by a sprinkling can to kill the fly eggs and larvae on the ground or similar surface. This procedure automatically reduces the larvae, which otherwise will mature into adults.

Baits for outside kill. In the last year or two, some amazing insecticides have been developed. There are baits which, when applied outside the plant, will actually attract the flies to feed on them and, as a result, kill them before they have an opportunity to attack the building.

Some of the safest and most effective ingredients in baits are the organic phosphate compositions malathion, Diazinon, and Korlan. They are particularly effective against immune or resistant flies. However, they must be used with good baits or lures.

These baits are either in liquid spray or dry scatter form. Incorporated with the luring substance, the spray, when residually applied or wetted down on outside roosting wall or ceiling surfaces, will attract and cause the flies to feed on the bait.

The dry bait is usually ground oyster shells or hominy grits impregnated with, preferably, Korlan and such attractants as butyric acid, lactose, milk whey, etc. It can be sprinkled or scattered on the ground or loading dock to draw the flies away from the plant and kill them.

Turn page

We recommend very strongly that either of these two type baits should be purchased in ready-to-use form rather than as a concentrate. Using a concentrate necessitates the worker handling an organic phosphate material, which too readily can be absorbed through the skin, with dangerous consequences. Concentrates also necessitate purchase and addition of attractants, and mixing is often done incorrectly, therefore reducing effectiveness of the formula.

A Matter of Barriers

The plant should be studied to provide all barriers or defenses possible to prevent flies from gaining ingress. It should be well screened. Doors should have self-closing devices and always open to the outside. Conveyor portals should be protected with screens of air or steam, or provided with a tunnel, the interior of which is painted black. Doors should be reduced to a minimum, for often they are much bigger than necessary and serve as a cordial invitation to flies.

Air-curtain protection. There are, however, some doors or conveyor portals that must remain open and unprotected a good portion of the time. These can only be protected by the use of fly-chaser fans, usually installed inside and directly over the doorway. They blow down and slightly through the door to provide an invisible curtain of air that flies cannot easily penetrate.

We estimate that, even though a few flies may gain entrance through the curtain, 90% protection can be enjoyed through proper use of fans. Here, the plant's ventilation exhaust system must be considered—to make sure that it is not sucking flies in through the doorways, or working against the fly fans. It is important that the right model fans be chosen, an adequate number used, and that they be installed properly.

Inside Control Pointers

Having provided all possible barriers on the outside, we must look to our inner defenses, since there will still be a few flies that gain entrance. Their number will depend entirely on the efficacy of the outside program. Too many flies inside indicate poor control outside.

Selective vestibules. Some food plants have found it beneficial to provide a sort of secondary barrier—an area just inside of the outside doorways where flies will be confined rather than going straight into the processing rooms. Use of a secondary doorway and a confining vestibule is particularly beneficial when this area is automatically treated with an insecticide space spray. Often this is set off automatically through permanently installed timing devices.

Perimeter kill. It is also necessary to set up a technique to kill flies as soon as they gain entrance to the plant and before they reach the processing areas. One such means is to install overhead parathion- and Diazinon-treated strings or cords.

Flies have a tendency, particularly at night, to roost on such overhead hanging strings or light cords. If these are impregnated with an organic phosphate material, such as the above, they will automatically serve as active traps to kill a great many flies. Because parathion is a virulent poison, however, such cords should only be hung in areas where, if they break, they are not likely to drop on food-handling surfaces.

A second technique involves treatment of walls and ceilings in non-processing areas with an oil base insecticide, preferably composed of about 1% Strobane, 1% malathion, and 1-2% Diazinon or a methoxychlor-lindane preparation.

This method is applicable only in non-food processing areas where affected flies will not drop into the exposed product.

Still another method is use of a swab on a long, extended handle. This is ideal for treating top surfaces of pipes and overhead structures where flies like to roost at night. Fly specks indicate the more popular habitats.

Space spraying. Despite all these defenses and offenses, a few of these pests will find their way into processing zones. Here, they get close to exposed food—and so must be stopped quickly at all costs. There is only one safe method for doing this—space spraying or insecticidal fogging at night when food and handling surfaces are protected against spray and falling, dying insects.

Because of the immunity or resistance factor in flies, we have found that the 1959 space-spray formula giving best results is one containing pyrethrins backed up or fortified by two synergists, piperonyl butoxide and Octicide 264.

Such an insecticide works most satisfactorily through the medium of either a permanently installed air-sprayer or portable electric sprayer that will produce large numbers of particles in the 15-30 micron size. These particles will hang suspended in the air for long periods of time and not wastefully precipitate.

Finally, we would like to emphasize that your plant's fly control program is entirely dependent on your utilization of ALL the above step-by-step methods.

If you use only two or three, you will have about 50% more flies (which might mean actually thousands) than the plant that employs all the steps.

Fly control is just like any other sanitation objective in the food industry. It is first necessary to engender the desire to have a fly-free plant. The above program requires use of different methods and different tools but is a complete program that will pay big dividends through gaining your fly-free objective.—*End*

"You better give up, dear. They're bringing it in faster than you can cart it away."

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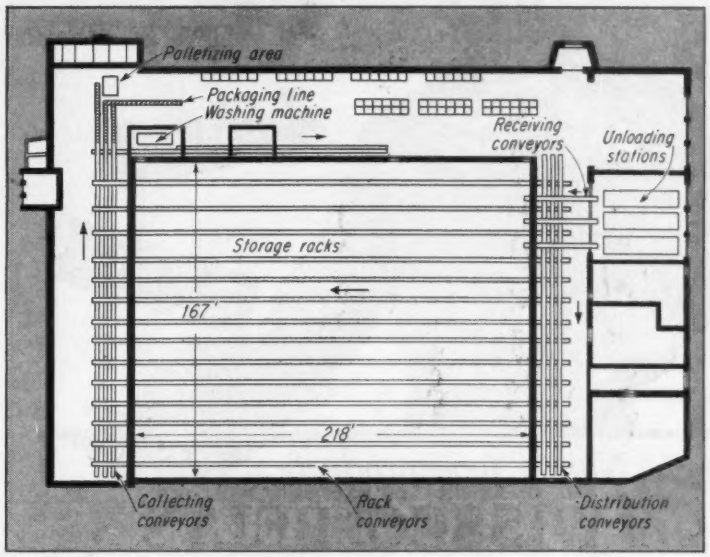
Chalk Up Another for Advanced Conveying!

New Dutch warehouse's mile-long system whisks cheese in and out of storage at 350-tons weekly rate for big saving in time and costs



AIR-CONDITIONED WAREHOUSE employs system of 25 stainless conveyors, 45 miles of storage racks.

HANDLING 350 TONS of cheese weekly poses no problems at our new Gouda, Holland, warehouse, thanks to a network of 25 stainless steel belt conveyors.

Engineered and installed by the Holland affiliates of Sandvik Steel, Inc., Fair Lawn, N. J., the mile-long system was designed with particular attention to rapid in-and-out handling, and ease of transfer between conveyors and storage racks (see drawing right).

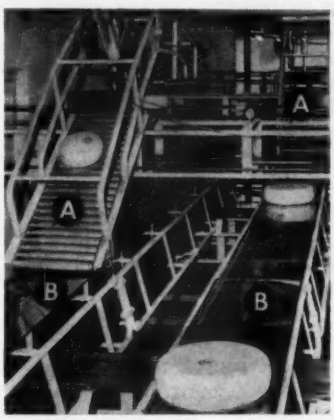
And although the products handled are Gouda and Edammer cheeses, the system lends itself to warehousing of many other food products.

One-Story Structure

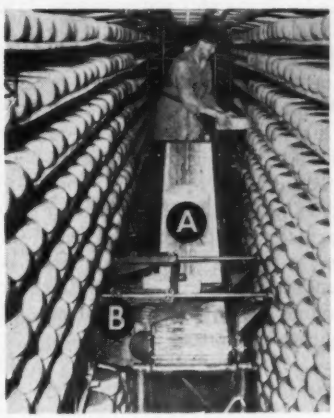
In building the new warehouse, a handling plan and layout were first evolved and then a one-story air-conditioned building erected to house them. The present system was chosen as the least expensive and most efficient. The warehouse can store up to 3¾ million pounds of cheese at any one time on its 45 miles of rack-space. And approximately 85% of the product moves out within three weeks of its arrival.

Storage room proper measures 167x218 ft. It contains 28 rows of storage racks, with appropriate openings to provide two aisles for passage from one side of room to the other. Every other row has a longitudinal steel belt in place of some of the shelves.

These conveyors are about 8½ ft. from the floor. They receive incoming cheeses from three transverse distribution conveyors located above their infeed ends, and discharge to three collecting conveyors located beneath other ends. Rack conveyors extend into receiving and shipping areas through opening in walls.



PORTABLE ROLLER UNITS (A) automatically shift incoming cheeses from three receiving conveyors to distribution units (B).



MOBILE UNIT (A) receives cheese from rack conveyor (B), feeds it to platform for quick manual transfer to storage shelves.

Cheese is unloaded (from trucks that carry about 15 tons each) at one of three stations and transferred to receiving conveyors. These have both inclined and horizontal sections on which the cheese is elevated then moved across infeed ends of the distribution units. Here, scrapers transfer it to inclined rollers leading to the distribution conveyors. Each receiving conveyor is served by one roller unit, which is trolley-mounted to enable transfer of cheese to any one of the three distribution conveyors.

Latter have similar roller-ways that move cheese to any of the 14 rack conveyors. Receiving operations and routing of incoming product are controlled by a dispatcher stationed in truck unloading area.

A special-purpose mobile unit is employed to move cheese from rack conveyor to storage shelves. This device travels in the aisle and has a deflector arm that scrapes cheese off the steel belt and onto a small platform. A short inclined conveyor

W. van WIJNEN

Managing Director, Messrs. De Producent, Gouda, Holland

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Beech-Nut Life Savers, Inc. relies on Wissco Stainless Steel belting because the open mesh construction allows uniform, efficient air circulation for cooling, and eliminates flavor-transference problems in their candy processing. And for dependability and economical operation, Beech-Nut reports: "Absolutely no downtime due to belt repair or replacement in 30 years of using Wissco Belts."

The steel in a Wissco Belt withstands the rigors of flash freezing, the heat of cooking or baking, the corrosives of washing or draining—*without stretch, distortion or breakup.* Wissco Belts are supplied in stainless steel—to help meet sanitation regulations—as well as galvanized, carbon or alloy steels for specific applications.

Every Wissco Belt is *washed before shipment* so it can be put into operation as soon as it is installed. And your Wissco Belt will be *shipped on a reel,* ready for quick, easy installation. Reels cost much less to ship and store than the usual multiple crates.

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then moves it to a second platform at level of shelf being loaded. Here an attendant completes the transfer. Shelves extend from floor to ceiling, and mobile unit's inclined belt and unloading platform may be adjusted for any required height.

Most of the cheese is of the flat Gouda type that is easily carried on the conveyors. But, to facilitate handling of bread-shaped or ball-type Edammer varieties, two storage-rack conveyors, also one incoming and one outgoing transverse conveyor, have been equipped with side skirts.

For shipment, cheese is returned to rack conveyor, which moves it to one of the three transverse collecting units. Two of these conveyors deliver Gouda cheeses to inclined rollers that feed a packaging line. The third unit similarly supplies a palletizing area for bulk handling by fork truck.

Edammer cheese moves to a washing machine via a special outgoing transverse conveyor, one end of which is located beneath collector conveyors so that cheeses may be transferred by an incline.

A dispatcher in the shipping area controls outgoing operations and is in phone contact with the man at the receiving station so that use of the convevor network can be coordinated. He directs employees inside the warehouse by loud speaker, and they in turn fill the various orders from the racks. First cheese of each order is tagged so that lots may be properly segregated in the shipping department.

Stainless steel belts are used in this installation because of their sanitary, non-corrosive, and ease-of-cleaning properties. They are also desirable because they do not retain odors and therefore cannot impart them from one product to another. When stainless steel is not required, cold rolled carbon may be used, at a cost comparable to other types of belting. —*End*

Factors Influencing Yield Of Beta-Carotene

Production of Beta-carotene by fermentation of cereals with fungi is affected by types of grains and by addition of lipids, β- or α-ionone and certain non-ionic surface active agents to the medium.

Paired cultures (plus and minus mating types) of *Blakeslea trispora* were used to inoculate the hydrolyzed grain medium which was incubated for 6 days at 83F. on a rotary shaker.

Highest yields of β-carotene, (35-40 mg./100 ml. medium) were obtained with hexane-extracted soybean oil medium as base nutrient. Approximately 95% of total carotene was all-trans-β.

Oils and fats containing large amounts of oleic and linoleic acids such as cottonseed and soybean oils, white or brown greases, also increased the yield. Choice white grease (4% in medium) yielded 40.5 mg. carotene/100 ml. compared to 0.155 mg. in control medium.

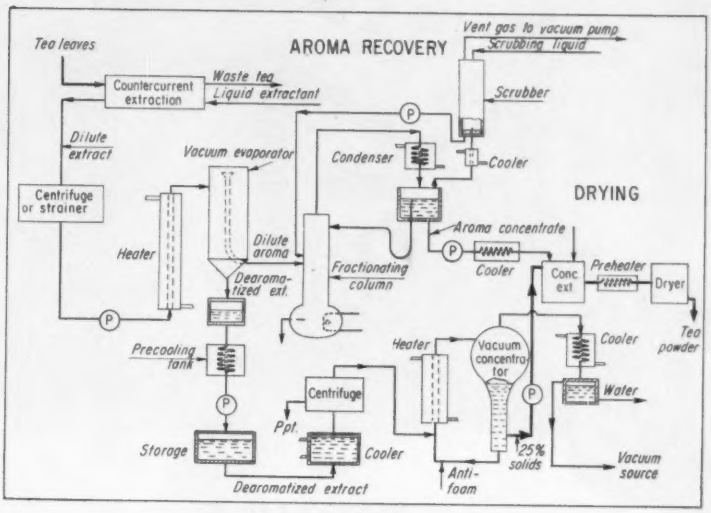
A number of surface active agents also gave larger yields. Triton-X-114, for example, induced a yield of 41.75 mg. per 100 ml.—*Applied Microbiology* 7(2), 94-101, 1959.

Detection of Strains In Pitching Yeast

Pure cultures of brewers' bottom yeast from single cells can be grouped into "bios types", depending on their ability to grow in synthetic medium deficient in one or more growth factors.

Four bios types are known. They are yeasts that require: (1) Biotin only; (2) biotin and pantothenic acid; (3) biotin and inositol, and (4) biotin, pantothenic acid, and inositol. By plating brewery mixed cultures on media deficient in one or more growth factors, proportions of the 4 strains defined by response to the growth factors can be determined.

Purity of strain is thus established, and changes with time, fermentable materials, or contamination can be followed. Method is sensitive to one cell of a bios type among hundreds or thousands of another types.—*Paper by Green & Sullivan* (Wallerstein Lab.), ASBC, Montreal, May 1959.



New Process Improves Soluble Tea

Preparation of a tea concentrate or powder having aroma and flavor of the freshly brewed beverage, and which does not become cloudy when mixed with cold water is the object of a recently patented process.

Cruxes of the method are: (1) Removal and recovery of aroma constituents from extract, then adding them back to concentrate prior to drying, and (2) precipitation of cloud-forming material by chilling partially concentrated extract, then removing it by centrifuging.

In the process (drawing above) tea leaves are steeped in hot water in counter current unit, producing an extract of 3½-5% soluble solids. Following straining to remove undissolved "fines", extract is heated and fed to a flash chamber (vacuum 25-29 in. Hg). Here, about 20% of feed is evaporated and goes to aroma recovery equipment. Balance, now 4-6% tea solids, is cooled to 85-70F. and held until 10-20% of solids precipitate, then clarified.

Clear extract is again heated and fed to evaporator (vacuum 26-29 in.) where it is concentrated to 25% tea solids and discharged to storage tank.

Vapors from flash chamber are fed to fractionating column where the aroma is stripped and condensed to form an aroma concentrate. This is cooled and added to 25% concentrate coming from the vacuum evaporator.

For drying, corn syrup solids in an amount equal to solids content of concentrate are added. Then mixture is heated and fed to dryer.—U.S. Patent 2,891,865, June 23, 1959.

Solubility of Dry Whole Milk Upped With Low-Melting Fat

Control of physical properties of the fat component of milk may provide a means of preparing a whole milk powder with the wettability and dispersability of a superior grade instant skimmilk powder.

This was indicated by experiments with reconstituted milks made from fresh skim and low-melting fractions of butteroil. Skim was heated to 145F., butteroil sufficient to produce dry products of 25% fat was added, and the mixture homogenizer at 3,000 psi. Resulting material was condensed to 42% solids and spray dried.

Three lots of powder were prepared containing fats with melting points of 19-21C; 22-24C, and 28-30C., respectively. A 4th contained unfractionated butteroil. Powders were instantized in a Blaw-Knox unit, screened to uniform sizes, stored 48 hr. and reconstituted in 75F. water.

Product No. 1 (fat mp. 19-21)

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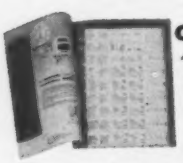
To fill at this high rate without foaming or splashing, an aluminum tube with a quick-connect fitting is inserted into each barrel in turn. While one barrel is filling, the operator caps the barrel ahead of it and pre-positions the empty one behind it.

Neptune meters now handle hundreds of solvents, chemicals, and food ingredients. Capacities 2 to 1000 gpm. Optional features: automatic ticket printers; explosion-proof Auto-Switch for control of pumps, valves, etc.; remote control systems. Stainless steel meters also available.



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NEPTUNE METER COMPANY

19 West 50th Street • New York 20, N.Y.

Advances in Technology

showed approximately the same wettability and dispersability as commercial instant skim powder. As melting points of fat components increased, wettability and dispersability decreased rapidly, indicating a definite relationship between fat mp. and solubility.—*J. Dairy Science*, 1038-44, June, 1959.

Protecting Color, Flavor Of Dehydrated Potatoes

A process for inhibiting non-enzymatic browning of dehydrated potatoes without adversely affecting their flavor during prolonged storage at room temperature is the subject of a recent invention.

Crux of the method is spraying the cubed, steam-blanched potatoes with a mixture of $CaCl_2$ and a water soluble sulfiting agent. Latter may be Na_2SO_3, $NaHSO_3$, K_2SO_3, $KHSO_3$, or mixtures of 2 or more of them.

Sufficient solution should be applied to insure presence of at least 0.1 part Ca ion and 0.015 parts sulfite ion per 100 parts by weight of the dehydrated potatoes.—U.S. Patent 2,893,878, July 7, 1959.

Enzymatic Fish Cleaning

An improved cleaning method in which intact fish is freed from external scales and internal viscera by enzyme action, has been developed at Texas Eng. Expt. Station.

As it eliminates need for much of the hand labor associated with present methods, the new technique should increase the economic value of small trash fish now caught in the shrimper's trawl.

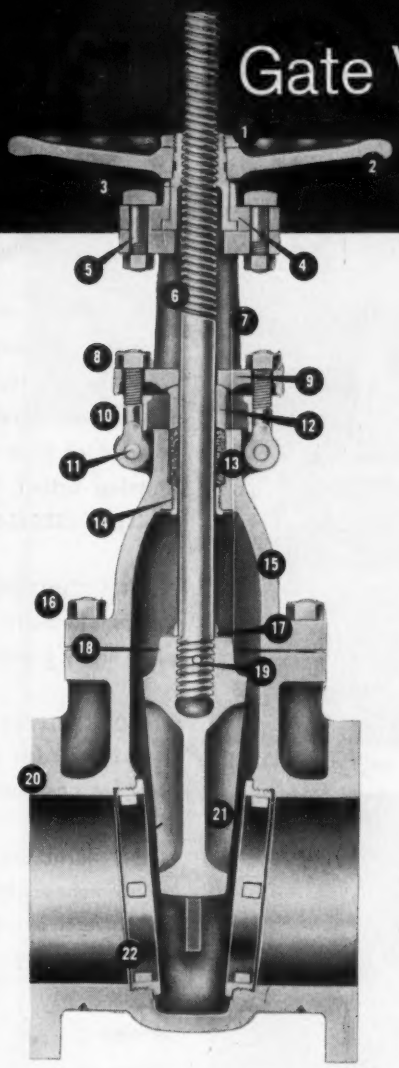
Most satisfactory enzymes are protein splitting ones of bacterial origin. Action is speeded by increases in temperature and concentration of the enzyme. However, temperatures above 130F. produce undesirable soft products.—*Texas Eng. Expt. Sta. News*, 3-6, March 1959.

Porphyrins in Beer

Coproporphyrins that occur in beer are the precursors of coproporphyrin and porphyrinogen produced by yeast, and neither can be found in unfermented wort.

On oxidation porphyrinogen goes over to coproporphyrin, a product that combines readily with copper and protein. Amount present in bottled beer represents difference between that formed during fermenta-

You extend valve life in Corrosive and Erosive services TWO WAYS when you Specify for Gate Valves, too



No. 1 ... when you specify "Jenkins" you get not merely "Ni-Resist" metal but you get Type 2 Ni-Resist Cast Iron! That affords extra resistance to acids, salt and alkaline solutions, sea water, brine and other corrosive and erosive fluids, vapors or gases. It is copper-free and will not contaminate or discolor the materials controlled.

Type 316 Stainless Steel is used for the wedge, spindle and other trimmings to give you a combination of metals which have remarkable ability to withstand destructive service.

No. 2 ... you get all the excellence which the Jenkins Diamond trademark has represented for nearly a century. The superior design and construction are visible here. Equally important superiorities which show up only in the records of long service and low maintenance are the close grain and high density of Jenkins castings ... the precision of Jenkins machining ... the rigid inspection and testing which every Diamond-marked valve undergoes.

It costs no more to buy Ni-Resist Gates made by Jenkins. And, it may cost much less to USE them. Write us, or ask your Jenkins Distributor for information folder No. 205.

1 Bronze yoke bushing nut
2 Handy grip iron wheel
3 Bronze yoke bushing
4 Iron yoke cap with zerk fitting for lubricating bushing
5 Steel yoke cap bolts and nuts
6 TYPE 316 STAINLESS STEEL spindle
7 NI-RESIST CAST IRON, TYPE 2, yoke
8 Bronze eye bolt nuts
9 Malleable iron gland flange
10 Steel gland eye bolts
11 Steel gland lug bolts and nuts
12 TYPE 316 STAINLESS STEEL gland
13 Teflon impregnated asbestos packing
14 TYPE 316 STAINLESS STEEL bonnet bushing
15 NI-RESIST CAST IRON, TYPE 2, bonnet
16 Steel bonnet bolts and nuts
17 TYPE 316 STAINLESS STEEL spindle ring
18 Asbestos gasket
19 TYPE 316 STAINLESS STEEL wedge pin
20 NI-RESIST CAST IRON, TYPE 2, through-port body
21 TYPE 316 STAINLESS STEEL solid I-beam wedge
22 TYPE 316 STAINLESS STEEL seat rings

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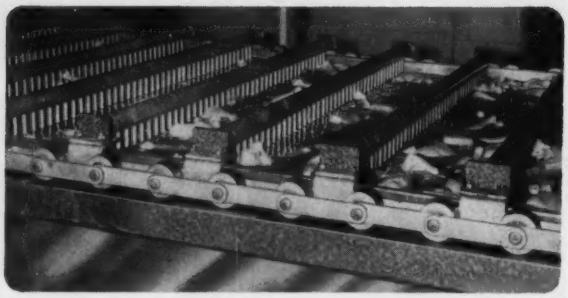
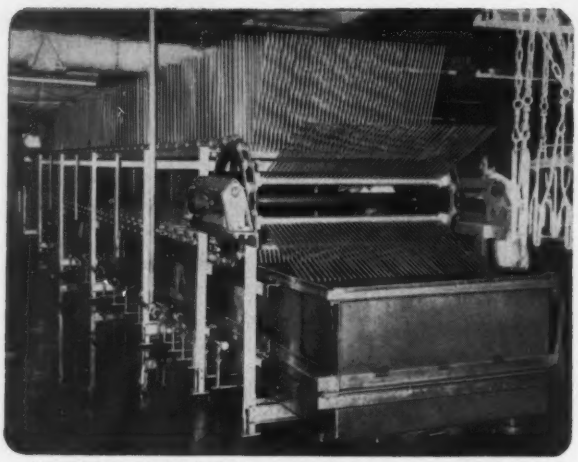
37° Poultry!

USING ONLY COLD WATER



with FRICK TRADE MARK "C-F-C"* CHILLER



"C-F-C" CHILLERS are sanitary, easily cleaned and maintained.

"C-F-C" CHILLERS deliver chilled, drained and clean poultry, from CLEAR-CLEAN-COLD water, in one operation.

* Counter-Flow-Continuous

PAT. APPLIED FOR

These Chillers convey the poultry through a flume against a current of fresh refrigerated water. By using the counter-flow feature, birds enter the temperate water first. Gentle air agitation aids in the removal of high body heat and also establishes a cleaning action. The final cooling is accomplished in CLEAR-CLEAN-COLD water, all in one operation.

"C-F-C" CHILLERS have a proven performance of delivering a better looking product (improved "bloom") and a highly profitable "yield."

"C-F-C" CHILLERS are made of stainless and galvanized steel. No hidden or covered areas—hard to clean. All parts are open and accessible—easily cleaned.

"C-F-C" CHILLERS are stationary, designed for a long low-maintenance life. They soon show an improved profit in the overall operation by savings in labor, space, equipment and cooling costs.

Write . . .

Telling us the size and capacity of your plant . . . and let us show you how "C-F-C" Chillers can help you cut overhead, improve operations, and make more profits. And continue to do so for many years.

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA., U. S. A.

tion and subsequent oxidation, and that lost by adsorption on yeast and trub during cellar operations.

Canadian ales and lagers contain 15-39 mcg./l., U. S. lagers have 0-12 mcg. Oxidation during fermentation and early storage gives beers of high coproporphyrin content. Since compound is not reduced by sulfites or ascorbic acid, its presence is measure of degree of oxidation of beer.

Coproporphyrin complexes copper readily, and the complex has been detected in beer haze materials. Both copper and protein complexes are believed to be oxidation catalysts. Compound is readily determined after ether extraction from beer by fluorescence analysis. Following changes in porphyrinogen and coproporphyrin content as beer moves through brewery should be valuable in studying oxidation during processing.—*Paper by W. D. McFarlane & E. Blaschke* (Canadian Breweries), at ASBC, Montreal, May 1959.

Ammonia In Worts

Rate at which yeast absorbs NH_3 from standard medium, readily measured by micro-diffusion method, offers a criterion for selection, identification, and classification of yeast strains. Yeast autolysis may also be indicated and measured by its use.

American beers were found to contain 3-33 ppm. NH_3 in 30 samples analyzed, with an average of 15 ppm. Foreign beers had 0-4, ppm.—*Paper by Owades & Jakovac,* (Schwarz Lab.), at ASBC, Montreal, May 1959.

Mushroom Washer

Due to their delicate nature, mushrooms cannot be washed in commercial vegetable cleaning units. But proper washing action can be obtained by gently rubbing them together while floating in a cushion of water.

A washer was designed employing an agitator comprising foam rubber-lined teeth mounted on an 8-in. slotted bar that moves in an elliptical path. In operation, mushrooms are gently fed into a tank of water and held beneath the agitator as it first moves downward, then toward the discharge flight. Agitator then lifts allowing mushrooms to rise. This shifting produces gentle rubbing that shears off the discoloration sensitive hyphal strands.—*Mushroom News, 9 May, 1959. (Pub. by Amer. Mushroom Inst., Kennet Square, Pa.)*

Versatile Carrier Conveyors Replace Men and Machines!

Versatile Carrier Natural-Frequency Conveyors are "doubling" efficiently as processing units in many food plants, *replacing costly labor and process steps.*

The conveying and processing of foods, from "sugar to cereals," are Carrier specialties. One, and often more, high cost process units can be eliminated in most food plants by merely installing *one dual-purpose Carrier vibrating conveyor.*

Some of the jobs where these low-cost, multi-purpose conveyors are meeting rigid process requirements include: washing, dewatering, sizing, picking tables, screening, coating, cooling, freezing, leaf and skin removal, flattening bags and distributing to multiple outlets.

All Carrier vibrating equipment features sanitary construction plus the exclusive, patented Natural-Frequency drive to assure gentle conveying and to prevent product bruising and degradation.

For further information write: Carrier Conveyor Corporation, 213 North Jackson Street, Louisville 2, Kentucky.

CARRIER
NATURAL-FREQUENCY®
VIBRATING EQUIPMENT
Engineering Specialists in Vibrating Equipment

CONVEY ● FEED
DEWATER ● SCREEN
COOL ● AGGLOMERATE
DRY ● SCALP ● COAT
DISTRIBUTE ● ELEVATE
● FLATTEN BAGS

CIRCLE 95 ON READER SERVICE CARD 95

$2500 cash...and a
CHUN
KING

bushel of bean sprouts

This is all about Jeno Paulucci, President of Chun King and Associated Enterprises, leading packers of American Oriental foods.

Jeno started his business with $2500 and a bushel of bean sprouts. Last year he did a $25 million gross, and he's just getting warmed up. He grows thousands of acres of wild rice, mushrooms, celery and other crops in Canada, Minnesota, Texas, Florida . . . and operates modern plants processing fine Italian foods, sauces, pre-cooked wild rice, frozen fruit rolls, the complete Chun King line . . .

Is Jeno Paulucci a "whole man"? What do you think? His interests are as broad and diverse as the food industry, itself. Is he marketing-minded? Just listen to him:

"Today, the food manufacturer must recognize the dominant role of marketing. He has to adjust his thinking to the realistic needs and limitations of dynamic U.S. markets."

Jeno is a fast-moving food management man if ever we've met one. And growing up around him, other aggressive young *managers* who, regardless of their individual specialties (quality control, engineering, sales, or what) are foodmen, first . . . yes, *whole men.*

They read FOOD Engineering. It, too, is profit-minded, made to their order. It is the complete magazine for the whole man. And the sales-making magazine for you!

Where do you find these "whole men"?

There are broad-gauge management men like Jeno Paulucci all over the food field. They wear all kinds of hats. Usually, neither title nor function is a quick clue. To wit:

(Top) Minos Asproyerkas, Vice-Pres. and Chief Engineer, National Baking Co., Chicago. (Middle) A. D. Redmond, General Manager, Pet Dairy Products Co., Knoxville. (Bottom) Wm. C. Durkee, Marketing Vice-Pres., Pepsi-Cola.

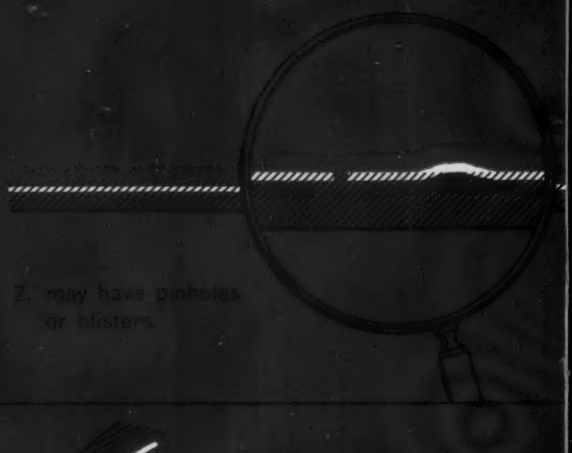
Where do you find them? Why, reading FOOD Engineering, of course!

FOOD
ENGINEERING

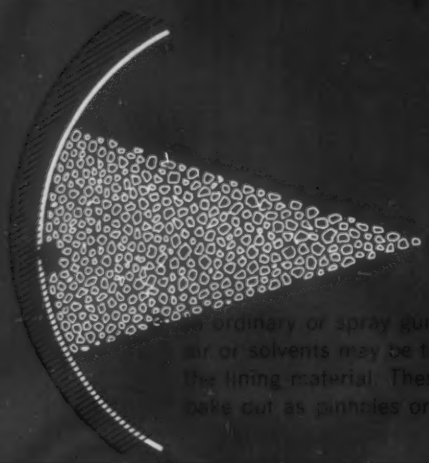
For Better Management in Manufacturing, Packaging and Marketing

A McGraw-Hill Publication, 330 W. 42d St., New York 36, N. Y.

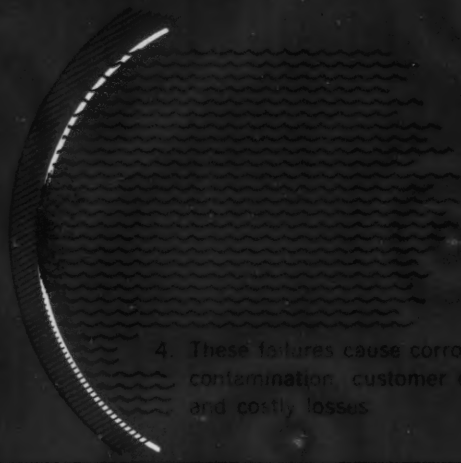
1. The lined drums you buy



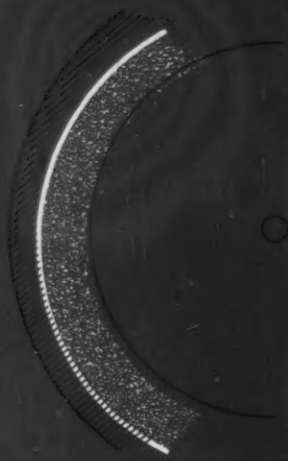
2. may have pinholes or blisters.



3. In ordinary or spray gun application, air or solvents may be trapped in the lining material. These later bake out as pinholes or blisters.



4. These failures cause corrosion, contamination, customer complaints and costly losses.



5. Rheem Centrifugal Spray uses no air and the solvent content is vastly reduced. The result:

NO PINHOLES
NO BLISTERS
in drums lined by

RHEEM CENTRIFUGAL SPRAY

And that's not all. For more than three years, Rheem Centrifugal Spray has been delivering lined drums free of thin spots and globs or skips. Air turbulence is eliminated. Human error is eliminated. Lining thickness is controlled to within 1/10 of a mil. Linings are cured by unique Rheem Vertical Curing in three stage, high temperature ovens. For more information, or help in developing a lining for a problem product, write the world's largest manufacturer of steel shipping containers at 1701 West Edgar Road, Linden, New Jersey. Plants across the country . . . Chicago, Houston, Linden, New Orleans, Richmond, Calif.; South Gate, Calif.; Tacoma. For other sales offices see the Yellow Pages.

Rheem

MEN & COMPANIES

Marketing Precept . . . "Yesterday's plan is not good enough for today, and today's plan simply won't work tomorrow."

So says California Packing Corp.'s Oliver E. ("Ollie") Seegelken. Retiring after 40 yr. with firm, he comments upon such food developments as growth of self-service and advent of the supermarket, and emphasizes that each has called for "new policies, new packaging, and new products."

He relinquishes marketing v.-p. reins to Ross B. Yerby, Jr., 48.

Latter joined Calpak in 1937, and has been a director since '49. He became merchandising director in '56, and in '58, general sales director for U. S. and Canada.

ROSS B. YERBY, JR.

L. W. BROWN

Big Apple . . . "Solid promotion . . . spectacular success . . . on a modest budget."

That is report of Processed Apples Institute, Inc., on results achieved since its founding in '51.

Predicted consumption of apple products for this year is "almost double" that in base period '46-50.

Course charted for future at recent annual meeting was: Hang onto surefire techniques —"but don't let success breed smugness."

New president is L. W. Brown, sales v.-p. of National Fruit Product Co., Inc., Winchester, Va. He succeeds J. Pinckney Arthur, who shifts to v.-p. post.

"Agribusiness" . . . New board chairman, chosen at recent annual meeting of Foundation for American Agriculture, is William T. Brady, president of Corn Products Co.

Organized in 1945, FFAA brings together farm and business leaders to further "continuous dynamic interrelationship of agriculture and industry."

Food company representatives elected to executive policy committee are: Quaker Oats Co.'s Board Chairman R. Douglas Stuart, and Armour & Co.'s Exec. V.-P. Robert H. Borchers.

William T. Brady

William B. ("Bernie") Clements, production v.-p. of Seabrook Farms Co. since June '58, has been elected executive v.-p. Firm was recently acquired by Seeman Bros., Inc. (see FE July, p. 96).

L. E. Felton steps up to post of president of Green Giant Co., Le Sueur, Minn. He succeeds **W. F. Dietrich,** now vice chairman of board.

James S. Fish, v.-p. & advertising director of General Mills, Inc., has been elected board chairman of Advertising Federation of America, Minneapolis.

Reduce the cost of ANTIOXIDANT PROTECTION with

TAKAMINE

Sodium Erythorbate* and Erythorbic Acid

The development of the isomers of Vitamin C offers food processors all the antioxidant advantages of L-ascorbic acid and sodium ascorbate at substantial savings.

Take advantage of these valuable Takamine antioxidants in processing beer, carbonated and still beverages, canned and frozen vegetables, meat and fish. Takamine erythorbates assure natural color, flavor and longer shelf life.

If you have an oxidation problem, our Technical Service Department will be happy to assist you in its solution.

Write for new booklet on the use of Takamine sodium erythorbate in food processing.

*sodium isoascorbate

It will TASTE better, LOOK better, SELL better with Takamine Products.

TAKAMINE® Miles Chemical Company

("pronounce it Tack-a-ME-nee)

division of Miles Laboratories, Inc.
Clifton, New Jersey
phone PRescott 9-4776 or TWX PAS-78

9TAK-15

Kenneth Kirk, formerly head of FDA's Boston district, has been appointed assistant to commissioner for regulations making. Post is newly created to cope with "increasing volume and complexity" of regulations.

Theodore Phillips is new president of Coastal Foods Co., div. of Consolidated Foods Corp. He succeeds **James E. Glover,** resigned. Mr. Phillips was executive v.-p. of Phillips Packing Co. (now Coastal Foods) prior to its purchase in '57 by CFC, and for past year has occupied post of chairman.

Earl Price, oldest v.-p. in point of service of Libby, McNeill & Libby, has retired after 43 yr. with company.

Dr. Dale H. Sieling, agriculture dean at U. of Mass., has become scientific director of U. S. Army Quartermaster Research & Engineering Command, Natick. He succeeds **Dr. A. Stuart Hunter,** deceased.

Industry

American Beverage Corp. stockholders will vote soon on transaction to acquire, via exchange of stock, 7 bottling companies in Ohio and Texas. Control of ABC would pass to present management of the 7, since move would result in group's owning a majority interest. Companies are: **Golden Age Beverage Cos.** Dayton and Houston; **Get-Up Corp.,** Akron; **Golden Age Beverage Corp.,** Youngstown; **Golden Age Youngstown Corp.;** and **Golden Age Realty Cos.,** Houston and Youngstown.

Morris April Bros. Eatmor Div., Inc., successor to **Eatmor Cranberries, Inc.,** marketing co-op, plans 200% expansion. New packing lines are being installed, and additional warehousing space is under construction. Complete rights to "Eatmor" brand name for all products has been acquired, and line will include apples, peaches, and other fruits and vegetables.

W. F. Schrafft Corp., Boston, has engaged Eron & Eron, Inc., Englewood, N. J., to completely redesign its entire line of candies, and coordinate all phases of packaging and merchandising.

Sugar Research Foundation's new $250,000 research budget lays increased stress on food technology. Included are three new projects: Study of sugar's role in candy (MIT); in chocolate ice cream (U. of Georgia); and use in apple products (Cornell U.).

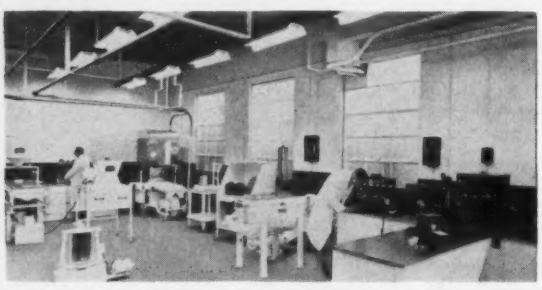
Associated Industries

American Can Co. sees soft-drink can output booming over half-billion mark this year. Basis is Jan.-April production of 163 million, 42.9% higher than in '58 period.

Daystrom-Weston Sales Div. reports completed national expansion for products of **Industrial Gauges Corp.,** recently acquired by Daystrom. Varied line includes X-ray gages, refractometers, etc., used by dairy and other food fields.

Disposables, Inc., is name of New York City firm manufacturing disposable paper clothing for use in food, meat, poultry, confectionary, and similar fields.

Psychometrics Div., U. S. Testing Co., Inc., Hoboken, N. J., has recently established team of psychologists to research consumer attitudes in 26 countries.



J. H. Day Co.'s new customer services center, Cincinnati, more than doubles former testing lab space. Available for experimental work are small models of all firm's larger production equipment. Lab area (above) contains sifting, blending, and pneumatic conveying machinery.

ELIMINATE TRAMP IRON

in liquid pipelines

ERIEZ

permanent non-electric magnetic

FERROUS TRAPS

ULTIMATE PROTECTION against fine iron and tramp iron contamination for most liquid-handling pipelines. Ideal for installation in food, chemical and ceramic applications. Protect product purity. Increase production. Prevent abrasive wear; reduce damage to filters, mixers, pumps, etc. Made with strong, one-piece cast bodies, Ferrous Traps withstand pressures up to 150 psi. Provide greater magnetic area than all previous models. Effective with materials up to 750°F. Quickly pay for themselves. Two types: standard stainless steel models and highly polished sanitary models.

MAGNETIC STRENGTH IS GUARANTEED FOR LIFE • QUICKLY, EASILY INSTALLED IN ANY POSITION • CLEAN, SIMPLE DESIGN HAS NO MOVING PARTS • MAGNETIC ELEMENT LIFTS OUT IN SECONDS FOR INSPECTION OR CLEANING • ADAPTABLE FOR LINES FROM ½" to 4".

Free literature has complete installation and application information. Write today to:
Eriez Mfg. Co., 106-V Magnet Dr., Erie, Pa.

ERIEZ

CIRCLE 226 ON READER SERVICE CARD

Steel Service Centers throughout the country have built up their inventories in anticipation of a suspension in steel production. These stockpiles totaling almost 3,600,000 tons are valued at ¾ billion dollars. If you have been using a steel service center as your source of supply—you can thank your lucky stars—because chances are they will still be able to fill your requirements.

Each distributor's representative is a metal specialist and is qualified to assist you with application and supply problems.

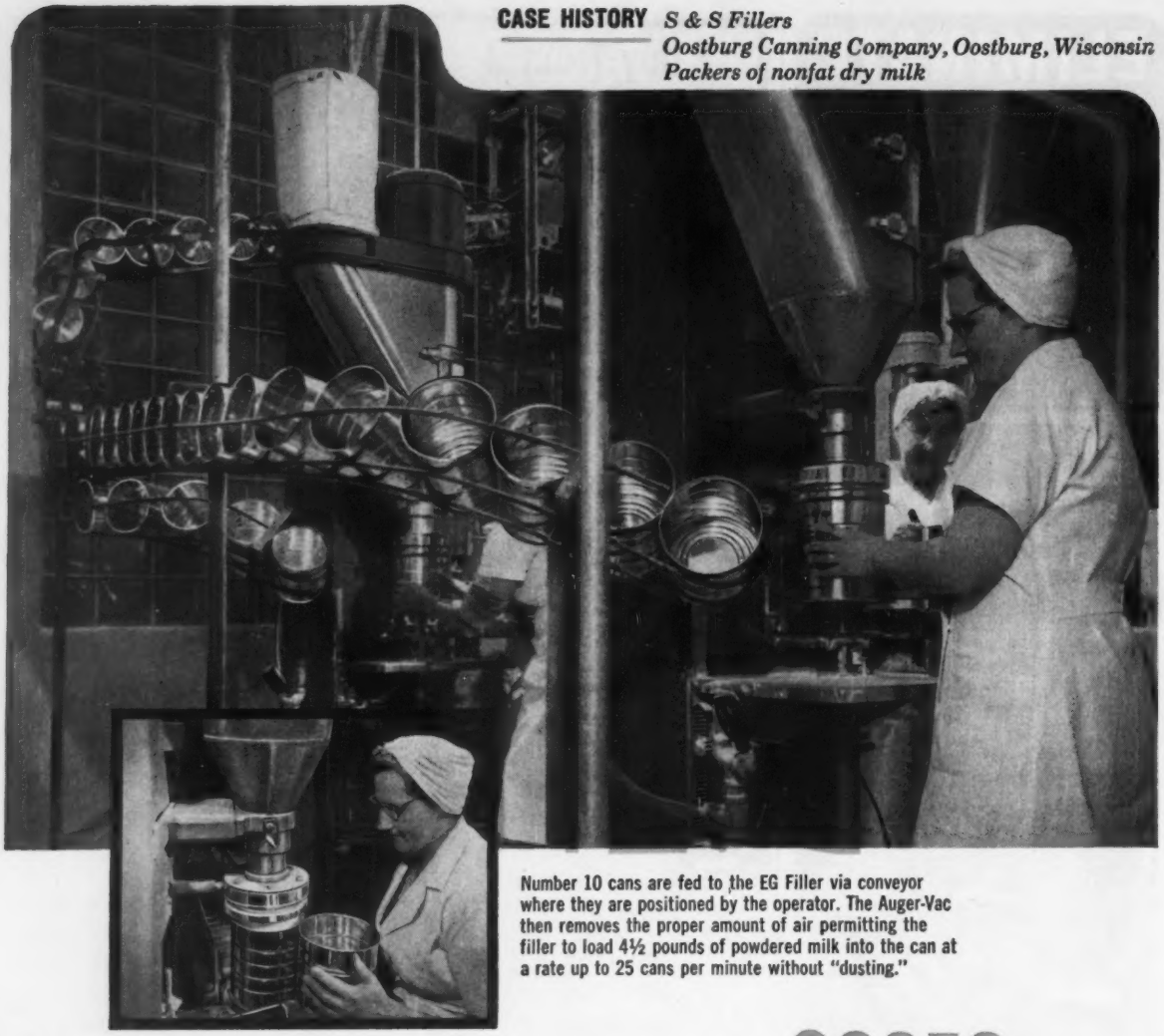
MICROROLD STAINLESS STEEL is regularly carried in stock in 252 of these independent steel warehouses. Washington Steel is a producer of sheet and strip exclusively, all of which is precision rolled on Sendzimir mills.

WASHINGTON STEEL CORPORATION

8-W Woodland Avenue, Washington, Pa.

CIRCLE 101 ON READER SERVICE CARD

CASE HISTORY *S & S Fillers*
Oostburg Canning Company, Oostburg, Wisconsin
Packers of nonfat dry milk



Number 10 cans are fed to the EG Filler via conveyor where they are positioned by the operator. The Auger-Vac then removes the proper amount of air permitting the filler to load 4½ pounds of powdered milk into the can at a rate up to 25 cans per minute without "dusting."

Powdered milk filling loss less than .00058

"Of the more than 200,000 pounds of powdered milk we handle each day, we lose only 110 to 115 pounds—or .00058 —due to dusting at the loading hoppers and filling stations. This amount would be much larger if we did not have Stokes & Smith Fillers with Auger-Vac attachment," reports Mr. Ellsworth Van Driest, secretary-treasurer of the Oostburg Canning Company.

"Before buying our fillers, we inspected other powdered milk operations to determine which machines were most efficient. We found that Stokes & Smith equipment led the field by a wide margin. In addition to three S & S G1 Fillers, we also purchased two S & S EG Fillers to permit quick easy conversion from packaging in 4½ pound, No. 10 cans to bagging cartons when the latter package is required.

"We have found our fillers to be dependable, rugged, well-designed and versatile. After two years of constant use, they are never down longer than one hour at a time. This ease of servicing plus versatility helps us maintain our 'full status' with U. S. Dept. of Agriculture packaging requirements."

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division
Stokes & Smith Plant
4914 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

FE SERVICE CENTER

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Reader Service ..... Back of Book

NEW EQUIPMENT & SUPPLIES

Indicates, Controls Viscosity

Precise viscosity readings are provided by a new visual indicator and indicating control unit. High and low viscosity alarms can be incorporated.

Unit is designed for use with manufacturer's basic measuring elements, which operate on principle of gaging time required for a piston to fall a given distance through solution being tested.—*Norcross Corp., Newton 58, Mass.*

Circle 316 on Reader Service Card

Prefabs Concrete Buildings

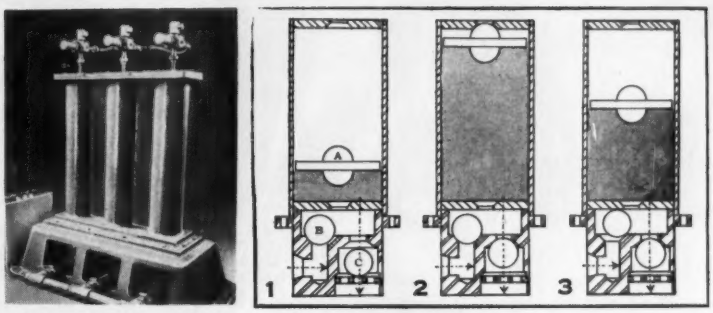
Erection of concrete outbuildings —as storage units, work facilities, garages, and the like—is greatly simplified by a new, patented prefab construction system (Shaffer Block Works, Somerset, Pa.).

Employed are precast panels and slot-keyed blocks. Cited are time savings of 75%, reducing labor, and hence costs.

The special slotted blocks serve to form corner, center, and interior partitioning columns. Panels are tongue-and-groove, wire-reinforced slabs. Extruded-aluminum windows are installed singly or in pairs as walls go up.

Manufacture of the critically-dimensioned panels is carried out with steel forms designed and fabricated by—*Blaw-Knox Co., 300 6th Ave., Pittsburgh 22.*

Circle 317 on Reader Service Card



ACTION of new pump (photo) is depicted (right) by cylinder phases: 1. Discharge, where air pushes down float-piston, first having closed inlet valve (B) and opened outlet valve (C). 2. Waiting, where cylinder is completely filled, outlet valve closed. 3. Filling, inlet valve open.

Free-Piston Pump Moves Anything That Flows

Radically simple air-drive design—omitting motors, shafts, belts, and packings—marks this new free-piston pump. And its high performance, free of maintenance complexities, is seen winning it numerous applications in the food field.

Unit comprises three cylinders (each lined with stainless steel), plus a top plate and inlet-outlet base unit. Within each cylinder rides a free-floating nylon piston, and each base unit incorporates two nylon ball check valves (see drawing).

In noiseless vibrationless action, cylinders fill by gravity, then are emptied in sequence by force of air pressure. Air charge is automatically switched from one cylinder to another by a timing-control system that insures uninterrupted flow.

To eliminate turbulence and minimize air absorption, piston floats on charge of product and serves to seal compressed air from base unit. Any chamber can be stopped while other two keep pumping.

Standard models will deliver 5 to 1,000 gpm., with specific flow depending on sizes of inlet and outlet pipes, various orifices, and input air pressure. Convenient and quick disassembly and reassembly are cited. —*The Crossley Machine Co., 301 Monmouth St., Trenton, N. J.*

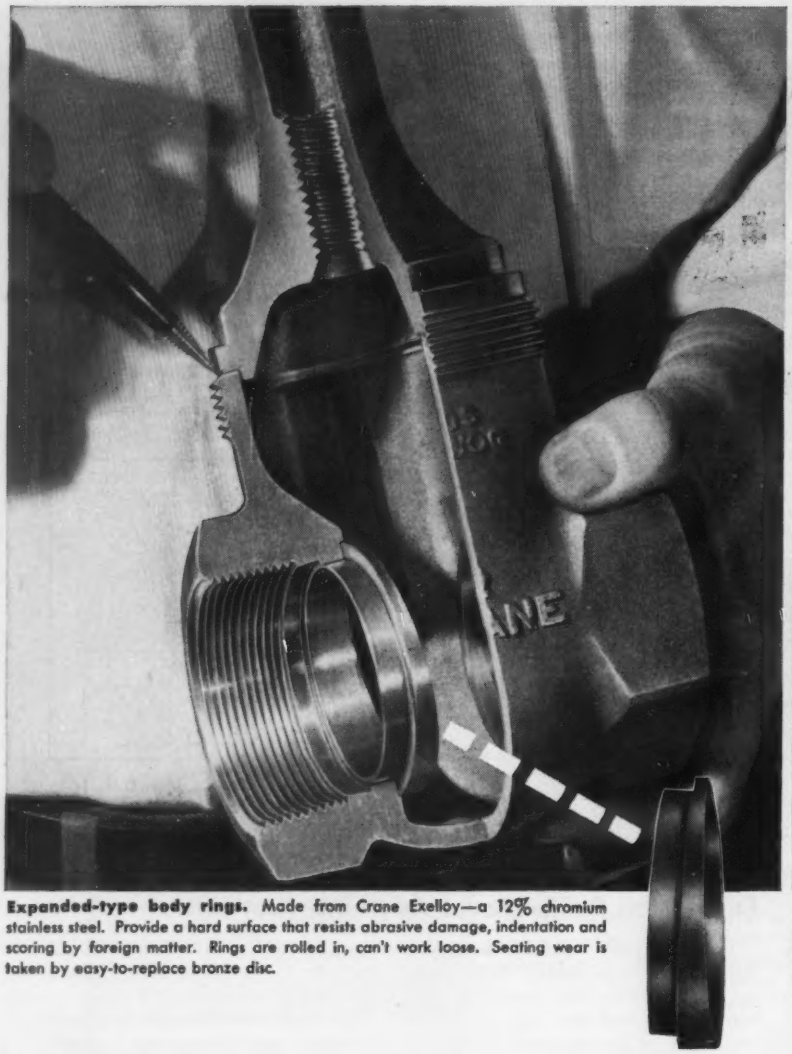
Circle 318 on Reader Service Card

Tabs Automation Motions

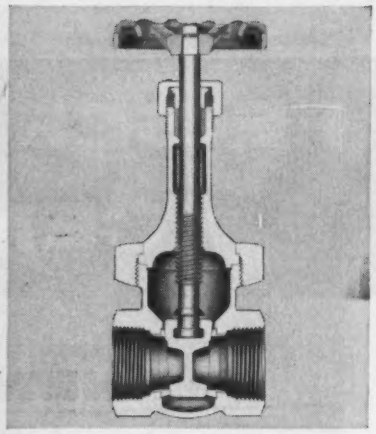
Measurements of linear motions to .0001 in. (range to .120 in.) are achieved with this new Model 102A-120 transducer.

Unit may be used in conjunction with accessories to provide remote indications and recordings for automatic process-control applications.

In operation, transducer triggers



Expanded-type body rings. Made from Crane Exelloy—a 12% chromium stainless steel. Provide a hard surface that resists abrasive damage, indentation and scoring by foreign matter. Rings are rolled in, can't work loose. Seating wear is taken by easy-to-replace bronze disc.



Quality in every detail inside and out. In rising and non-rising stem patterns—¼ to 3 inches—screwed ends. Working pressures: 200 lb. steam, 550° F.; 400 lb. non-shock cold water, oil, gas and air, 150° F.

Cylindrical body shape. Proved on high-pressure steel valves. Increases body strength without adding bulk. Distributes pressure uniformly. Reinforces seating area against distortion and chance for leaks.

12% chromium stainless steel seat rings make Crane 200-pound bronze gates last longer

Here is a close-up of Crane quality that shows you why these 200-pound bronze gate valves perform more dependably than ordinary bronze valves, with less maintenance.

For example, instead of integrally cast seats, they have long-wearing 12% chromium stainless steel body rings. Rings are rolled in... can't work loose in service. This also prevents leakage around rings. The quickly replaceable bronze disc takes normal seating wear.

Crane 200-pound bronze valves are competitively priced with bronze valves which do not have these and other important features. Why pay for less than Crane offers you? For complete facts, see your Crane Representative.

Write for Circular AD-2285. Gives complete technical data on both rising and non-rising stem patterns.

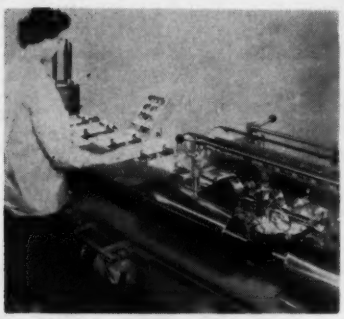
CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

electric output precisely proportional to displacement of its spring-loaded plunger.—*Daytronic Corp., 216 S. Main St., Dayton 2, Ohio.*

Circle 319 on Reader Service Card



Handier Bacon Cartoning

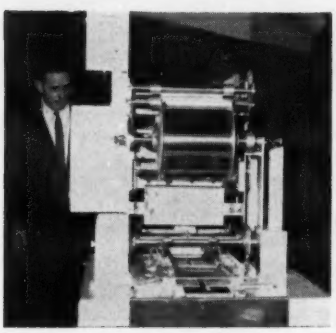
Bacon is packaged in newly convenient windowed "sleeve" boxes by this machine.

Trays holding slices are slid into flexed-up containers (photo) by single operator at 50 a min. Then machine automatically seals and dates the packages.

In the consumer's kitchen, tray need only be slid out to get a serving, then slid back to store the remainder.

Marathon Div., American Can Co. (now handling sales of the unit) was joint developer of the new machines.—*Lynch Corp., 2304 Crystal St., Anderson, Ind.*

Circle 320 on Reader Service Card

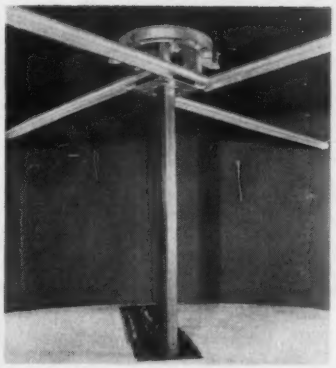


Lids 100 Trays a Min.

High performance lidding of aluminum trays—100 a min.—is reported with use of this new packing-line unit.

Device crimp-seals the covers from roll-fed foil stock. Incorporated is electric eye to assure precise foil register, and there is automatic "no tray, no foil" cutout.—*Scandia Packaging Mach'y Co., N. Arlington, N. J.*

Circle 321 on Reader Service Card



Streamlines Bin Discharge

In new efficient bulk-storage system, uniform discharge of material (as flour, sugar, starch) to takeout screws is assured by this free-floating rotating leveler.

The 4-arm unit is mounted inside a cylindrical, flat-bottom bin. Initial turns of its arms sweep product from top of bin. Then, in progressively descending with dropping level of product, the rotating arms (4 rpm.) clear and level out material from sides. Accordingly, stock in bin is uniformly emptied without clog-ups or accumulations.

Prior to a new loading, leveler is raised back to top, where it is turned at 12 rpm. during inflow to assure even, capacity bin filling. Helicoid screws, bisecting bin flush with floor (see photo), discharge product to collecting screw conveyor or rotary feeder valve outside bin.

Aluminum-neoprene attachment goes on arms for thorough routine bin cleanings. Cables that raise and lower leveler pass through bin-top and wind around cylinders powered by gearhead motor.—*Hinkle Machinery Co., Columbia, Pa.*

Circle 322 on Reader Service Card

Samples Flow Automatically

Samples, or dosages, are automatically taken from a pipeline of flowing product with a new sanitary device designed for operation in conjunction with the Siemens meter.

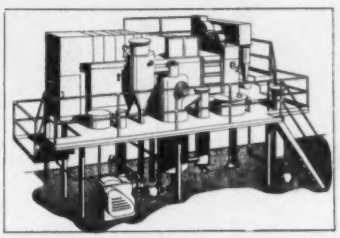
Unit is keyed to extract the small representative portions in equal ratios to the flowing quantity, and its performance is not varied by changes in flow rates or pressures.

Delivery of samples is via a membrane valve that is actuated by pneumatic impulses from a unit in the meter.—*T.E.A., Inc., 141-21 72nd Ave., Flushing 67, N. Y.*

Circle 323 on Reader Service Card

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign your name and address and mail.



'Package' Dry-Milk Plant

Now available in "package" form is compact milk drying plant (sketch) suitable for (1) dairies with seasonal surpluses or limited drying requirements, (2) pilot plant work, or (3) research studies.

Components include evaporator, spray dryer, preheaters, holding tanks, pumps, powder sifter, instrument panel, and interconnecting piping. Capacity is 2,000 lb./hr. of 8.5% solids skim milk. Concentrating this feed to 45% solids before entry into dryer, unit produces 175 lb. of powder having 3% moisture content.—*Dairy Equip. Div., Blaw-Knox Co., Mora, Minn.*

Circle 324 on Reader Service Card

High-Run Bag Palletizer

Automatic bag palletizer is designed for volume stacking in multi-shift plants. Any type of pallet—metal, wood, or paperboard—may be used.

Either Westinghouse Cypak mag-

NEW dry acid compounds are measured, mixed with water for use. These cleaners are non-fuming, produce no corrosive gases...dry or in solution.

OLD-type liquid cleaners require special handling precautions. Fumes are a nuisance to personnel, can cause damage to electrical and other equipment.

✓No Hazardous Fumes

Just one of the reasons why **Dry Acid Cleaners** based on **Du Pont Sulfamic Acid** are gaining wide favor for industrial equipment cleaning: ✓ Safer to handle ✓ Easy to use ✓ No hazardous fumes ✓ Powerful descaling action ✓ Less corrosive ✓ Lower handling and shipping costs.

CLEANERS BASED ON SULFAMIC ACID REMOVE SCALE AND DEPOSITS FROM:
Food-Processing Vessels, Pipelines, Gelatin Evaporators, Milk Evaporators and Pasteurizers.

DU PONT **Sulfamic Acid**

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

Please send me:

☐ Free booklet about dry-acid cleaners based on Du Pont Sulfamic Acid

☐ Names of formulators who offer these cleaning compounds

E. I. du Pont de Nemours & Co. (Inc.)
Industrial and Biochemicals Dept.,
Rm. N-2543FE
Wilmington 98, Delaware

Name_____

Firm_____ Title_____

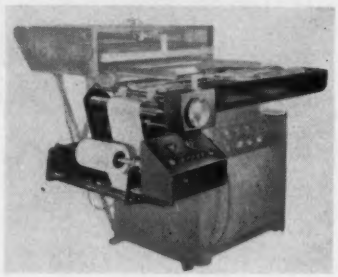
Address_____

City_____ State_____

netic control or standard relay type may be specified.

Operating parts consist only of motor-driven roller table, elevator, and ram. Table accepts and positions bags, and elevator descends one position as each layer of bags is added. Ram pushes off completed stack for pickup by fork-truck or conveyor.—*Miller Engineering Corp., Louisville, Ky.*

Circle 325 on Reader Service Card



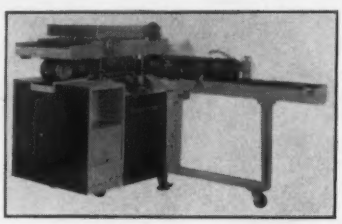
Blister-Pack Attachment

Completely automatic blister-package forming is achieved with this new attachment for the standard Pak-O-Vac unit.

Formed packets discharge in continuous strip ready to be trimmed, with no attention required so long as film roll is feeding.

Most thermoplastic films are handled by unit. Maximum draw is 4 in. male or 4 in. female, or a combination of both.—*Product Packaging Engineering, 5713 Joanne Pl., Culver City, Calif.*

Circle 350 on Reader Service Card



Imprints Lithographed Cans

Printing of color, name, formula, batch number, or the like, on already lithographed cans is simply carried out in one operation by this new machine.

Maker states that quality of the registered imprints matches that of the lithography on the containers.

Machine will print on metal, plastic, or fiber units, either filled or empty. And but two settings are required to switch from ¼ pint to gal-

Sure-Fire Packaging That Keeps Your Powder Dry

If you're aiming for sales in the booming market for hygroscopics . . . arm your products with the sure-fire ammunition of Western-Waxide packaging.

Whether you pack apple sauce or cocoa . . . Instant potatoes or milk, Western-Waxide has facilities and experience to develop and produce packaging that will keep your powders dry.

Our Moistite® bags, constructed of special combinations of polyethylene, foil and paper have cut packaging costs by as much as 42% . . . Pouches with the exclusive convenience of our C-Zip, tear string, open clean and easily . . . our overwraps are printed to stand out like an oasis on the desert.

Packaging for all America

For case histories and the facts on how others have saved packaging costs and increased sales of hygroscopics, write to Hygroscopic Packaging, 2101 Williams St., San Leandro, Calif. In the East, 4410 Hunt Ave., St. Louis, Mo.

CROWN ZELLERBACH WESTERN-WAXIDE DIVISION

In Canada address product inquiries to Crown Zellerbach Canada Limited, Vancouver, B.C.

Moistite and C-Zip are trademarks of Crown Zellerbach

Let Vicrum Control the Baking Quality of Wheat Flour

Bakers Find Vital Wheat Gluten Improves Buns and Rolls

Now—there's a new concept in baking.

You can control the quality of the flour you use. By adding Vicrum to a standard baker's flour, you can obtain the strong baking performance required for rolls, buns, and specialty breads.

Vicrum offers production economies, too. It improves mixing tolerance, and increases absorption. It adds to dough stability during fermentation, make-up, and proofing.

And in the finished baked product, these properties of Vicrum contribute to better quality, through greater volume, softer crumb, improved grain and texture, and longer shelf life.

We'll be glad to explain how Vicrum can go to work for you. Write for further technical information.

Vicrum®

Huron Milling Division, Virginia Cellulose Department

HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington 99, Delaware

VH59-5

An amendment to the Bread Standards of the Food and Drug Administration (effective April 5, 1959) permits the use of Vicrum (Hercules' Vital Wheat Gluten) in rolls and buns, enriched rolls and buns, raisin bread, raisin rolls and buns, at a rate not to exceed 4 parts wheat gluten for every 100 parts by weight of flour.

lon containers. Further, printing plate or type can be changed in a matter of minutes.

Occupying a compact 4x8-ft. space, unit is self-powered. Caster mounting gives easy mobility.—*Charles Beck Machine Corp., King of Prussia, Pa.*

Circle 351 on Reader Service Card

Chart-Holding Stock Cart

Handy chart rack on handle bar and coupling hook for forming units into trains (as seen upper right) are features of new warehouse stock-trailer.

Link chains are included for overhead towline operations.

Of all-steel welded construction, versatile units may be ordered to customer's size and load specifications. —*Palmer-Shile Co., 15981 Fullerton, Detroit 27.*

Circle 326 on Reader Service Card

New Milk-Truck Body

Largest in a new line of three modernly efficient step-in retail milk delivery truck bodies is this Model DS8-L, with loadspace 96-in. long, 74-in. wide, and 66-in. high. It's carried on standard 1 and 1½-ton chassis.

Other two models, the DS-6 and DS-7, are 74x66x62 in. and 90x66x62 in., respectively. Each body is designed to accommodate the many new sizes of milk container cases through use of adjustable-width racks.

Driver's compartment has convenient drop-bottom floor. Sliding

NIAGARA "no frost"

YOUR REFRIGERATION . . . fully automatic

● You have continuous line production, the quickest freezing of raw or cooked food by the Niagara air method, always holding the highest quality. Niagara "No-Frost" makes your refrigeration fully automatic with uniform temperature and ALWAYS full capacity lost by the icing of cooler coils. You have always a clean, sweet freezer or cold room. You save labor and your upkeep cost is the lowest. You get full capacity refrigeration from your plant at the lowest power cost.

Write for Bulletin No. 105

NIAGARA BLOWER COMPANY

Dept. FI-8, 405 Lexington Ave., New York 17, N. Y.

District Engineers in Principal Cities

CIRCLE 227 ON READER SERVICE CARD

CY BELT says

"We make more different types of processing belts than anyone else!"

Cyclone makes all four basic styles of conveyor belting: spiral woven friction drive, spiral woven chain drive, flat wire friction or sprocket drive, and flex-grid. These are available in the widest variety of sizes, meshes, weaves, steels and alloys. We make reinforcing members, flights, side plates and other specialties to meet specific needs. That's why our recommendation can be tailored to *your* plant and *your* product. Why not contact a trained Cyclone representative for help in analyzing your processing and material handling problems? Fill in the coupon today.

USS and Cyclone are registered trademarks

USS **Cyclone Metal Conveyor Belts**
Spiral Woven • Flat Wire • Flex-Grid

Prompt service to belt users is assured by two factories, one in the Middle West and one on the Pacific Coast.

Cyclone Fence Dept.
American Steel & Wire
Division of
United States Steel

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Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices, Coast to Coast

MAIL THIS COUPON

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Dept. HB9, 614 Superior Avenue, N.W.
Cleveland 13, Ohio

Please send me, without obligation, your catalog No. 5 on Cyclone Processing Belts.

Name.....
Company.....
Address.....
City..... State.....

Planning ahead can save $20,000 on fluid mixing

An idea from your LIGHTNIN Mixer representative's briefcase

This engineer is listening to an idea that's going to save his company $20,000 on fluid mixing.

He's working on a process that will employ mechanical mixers. But in a year or so, process requirements are expected to change, throwing 15% greater load on the mixers.

Problem: how can he anticipate this change *now?*

Solution proposed by LIGHTNIN Mixer representative: install standard turbine-type LIGHTNIN Mixers geared for the immediate job, but sized to handle the expected load.

When requirements increase, simply change impellers and two gears in each mixer—providing correct power input for the new conditions at minimum expense.

What this man can do for you

This is one example of the many ways your LIGHTNIN representative can help you get efficient fluid mixing at lowest long-term cost.

He can give you better service on fluid mixing than anyone else—because he has seen and done more of it.

Take advantage of his unmatched experience by putting him on your process-design team. For prompt help on any fluid mixing operation, call him in now. He's listed in Chemical Engineering Catalog. Or write us direct.

Lightnin® Mixers

MIXCO fluid mixing specialists

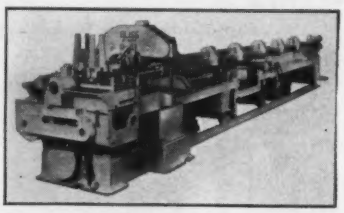
MIXING EQUIPMENT Co., Inc., 143-h Mt. Read Blvd., Rochester 3, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

Epuipment & Supplies

cab doors and double rear doors (36 in.) are standard. High tensile alloy steel is employed in body construction.—*Boyertown Auto Body Works, Boyertown, Pa.*

Circle 327 on Reader Service Card



Makes Cans in Many Sizes

Cans in a wide variety of sizes are turned out by this single bodymaking machine—the new Model 603 "Universal."

Range is up to 6⅞-in. diameters and 7$\frac{13}{16}$-in. heights, making the unit specially suitable for use by the processor running a broad line of products.

Body feed is of conventional bottom type, with simplified blank hopper and suction-cup assembly. Design features a single crankshaft and open arch construction, affording easy accessibility to forming parts.—*E. W. Bliss Co., Container Div., Canton, Ohio.* Circle 328 on Reader Service Card

Vacuum-Cup Case Handler

Handling of large cased materials is simplified by this new vacuum powered attachment for lift-trucks.

Unit will hold as many as four big cartons of products (up to 300 lb. each) through suction created by four vacuum cups mounted on truck carriage. Method eliminates need for clamps or forks forward of carriage, thus improving ma-

Makes every haul a ball!

Dodge drivers have a happy talent for delivering their cargoes on time—and arriving in the best of spirits. One glance into a big, roomy Dodge cab shows you *some* of the reasons why. And you understand a lot *more* of the reasons when you thread a high-powered Dodge van through traffic or swing it up to a loading dock. Dodge steering, for instance, has a friendly ease that comes from its gear-before-axle design and shortest turning radius. There are suspended brake and clutch pedals, with hydraulically actuated clutch for easy operation . . . and more.

Want to be filled in on *all* the Dodge extra-value features? Talk to your Dodge dealer, see why . . .

today,
it's real smart
to choose **Dodge Trucks**

Dodge "Job-Rated" trucks make servicing easy, too! The exclusive Dodge full-width hood rises a full 90 degrees—it's like taking the top completely off the engine compartment. For routine checks of battery, oil and water, hood opens to a regular 45-degree angle. It's the industry's most functional hood!

CLINTON can do it with CORN

Zea Mays

... that which sustains life

The products from corn that are made by Clinton contribute to better living for millions

Zea Mays is derived from the Greek name for grain and the American Indian sound for "that which sustains life."

The Indian used corn as food—and knew very few and simple ways to prepare it. Corn, today, is vital as a food for humans and livestock—but, the products from corn are many and it is impossible to count the ways they contribute to our better living.

There are very few products you buy that do not use a product from corn in some way. Corn sugars and starches are used extensively in food processing. Starches aid in the textile industry, and the laundry industry—the clothes you wear needed corn. Corn makes better papers and packaging boards. Corn is necessary in drugs and medicines—in beverages and bubble gum.

Corn is our business at Clinton. In our modern plant we produce the finest products from corn—under the strictest system of quality control. And, Clinton research is constantly discovering new applications for corn in the quest for better living for everybody.

Clinton serves the FOOD industry

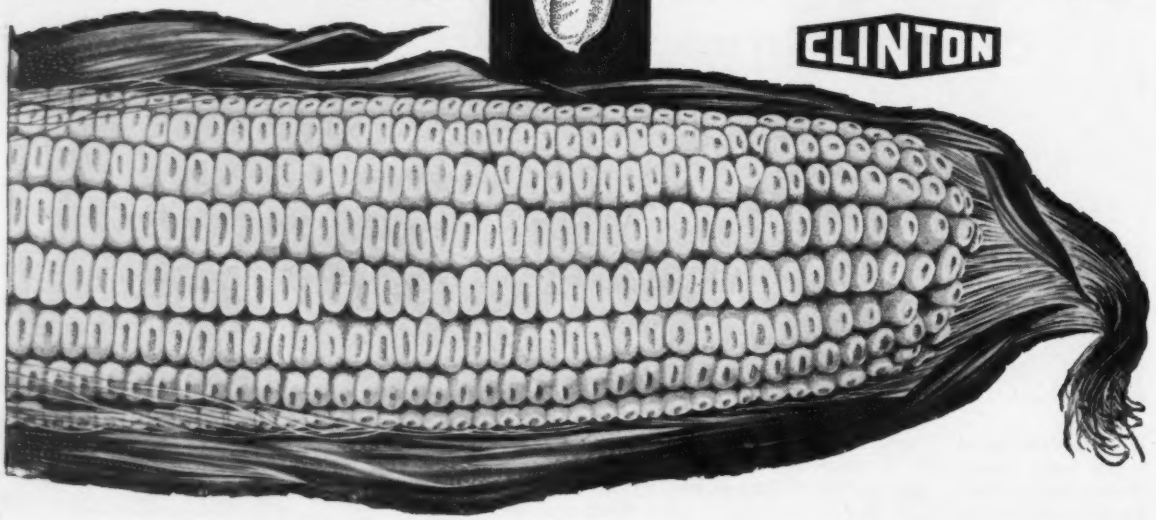
Clinton corn syrup and dextrose are used by leading packers of fruits and vegetables to improve the color, flavor and texture of their products. Clinton's uniformly controlled, quality products will meet your manufacturing requirements. Consult your Clinton salesman. He will provide product information, arrange for prompt technical service, or assist you in any way possible.

CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

CORN SYRUPS • DEXTROSE
STARCHES • DEXTRINS • SUGARS • OILS
LACTIC ACID AND OTHER PRODUCTS FROM CORN

If you can do it with CORN
you can do it better with CLINTON

CLINTON



neuverability. No pallets are required.

Vacuum contact-hold action is simply controlled by truck operator. And a safety feature prevents accidental release of vacuum when load is not resting on a solid surface.—*Yale & Towne Mfg. Co.*, 11000 *Roosevelt Blvd., Philadelphia* 15.

Circle 329 on Reader Service Card

Rugged Belt-Conveyor Line

Strengthening of stress points is featured in new Titan line of belt conveyors, incorporated in units are oversized shafts, crown-face pulleys, and precision sealed ball bearings.

Horizontal-to-15 deg. models are offered in length from 7½ to 50½ ft. Incline models run from 17½ to 36½ ft. and are adjustable from 15 to 35 deg. for between-floors or high-stacking operations. Latter units are available with or without noseover and/or feeder belts.

Each of the five styles offered are inter-convertible by addition or removal of standard parts. All have 150-lb. unit load capacity. Buyer may specify ½ or ¾-hp. drive. Optionals include: 14, 18, or 24-in. belt widths; gearing for varied speeds; and forward-stop-reverse drum switch or mechanical or electrical remote motor controls.—*Samuel Olson Mfg. Co., Inc.*, 2418 *Bloomingdale Ave., Chicago* 47.

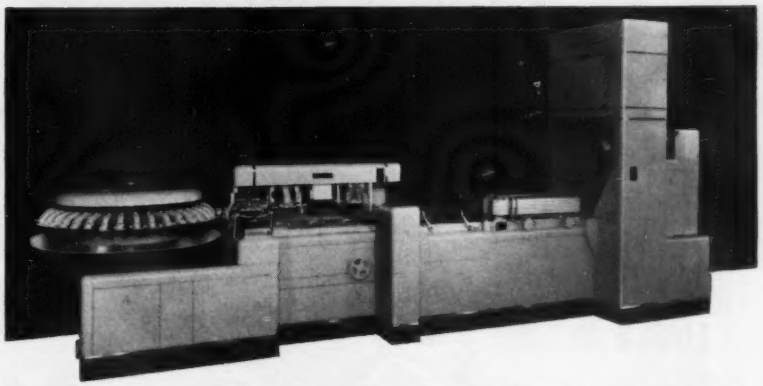
Circle 330 on Reader Service Card

INGREDIENTS

New Protein Hydrolysates are now offered having pork as well as beef flavors. And particularly cited by maker are their natural antioxidant, flavor locking, and emulsifying properties.—*Milwaukee Research Inst., Div. of American Bio-Synthetics Corp.*, 710 W. *National Ave., Milwaukee* 4. (331)

3-Way Meat Tenderizer is pasteurized product incorporating enzymes that act separately on muscle, fibrous tissue, and connective tissue. Overtenderizing is reported obviated by non-overlapping effect.—*Continental Food Labs., Inc.*, 315 N. *Front St., Phila.* (332)

Pectinase Supplement, called Klerzyme, promotes hydrolysis and depolymerization of pectic-containing materials processed in fruit juice and wine fields. And its activity isn't affected by usual SO_2 levels.



SEALTITE "SYNCHROMATIC" BAG SEALERS

REDUCE UNIT PACKAGING COSTS!

SEALTITE uses any standard gusseted bag—fills 30 to 50 a minute—and seals them with uniformly glued, prescored, double folds.

Packages are delivered well settled and neatly squared at top, bottom and sides. Stack easily. Sift-proof uniform closure on all bags. Seals are strong and tamper proof, yet readily opened. A tailored package fitted to the contents and with maximum merchandising value.

Users report that *Sealtite* reduces costs considerably per month per machine. It will pay you to investigate.

For complete information write:

CONSOLIDATED PACKAGING MACHINERY CORP.

BUFFALO 13, NEW YORK

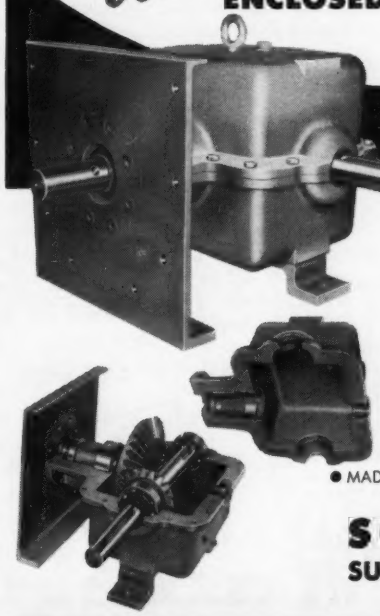
CIRCLE 228 ON READER SERVICE CARD

ADVANCED DESIGN

dreadnaught

ENCLOSED COUNTERSHAFT ENDS . . .

FOR SCREW CONVEYOR POWER TRANSMISSION



Stock units 6" to 20" screw conveyor with every possible shaft size. Each moving part readily accessible. Splash lubricated. Positive oil seals and rotating dust excluder. Thrust absorbed either direction. Operates horizontally or inclined.

● MADE IN 1:1 AND 2:1 RATIOS

SOUTHWESTERN SUPPLY and MACHINE WORKS

OKLAHOMA CITY, OKLAHOMA

ESPECIALLY DESIGNED FOR THE TOUGHEST INSTALLATIONS

CIRCLE 113 ON READER SERVICE CARD

PLANNING TO **MODERNIZE** FOR INCREASED PRODUCTION AT LOWER COST?

CHECK

THE IMPORTANT ADVANTAGES OF
STANDARD CONVEYOR'S
EQUIPMENT AND SERVICE

A Standard system of conveyors is *engineered* to your individual production process or physical layout of your plant. Standard conveyors are designed and built to handle volume without halt, congestion or breakdown.

For more than 50 years Standard Conveyor has concentrated on the design, manufacture and application of power and gravity conveyors and related equipment for the handling of varied commodities. This specialization has developed improved design and construction in the conveyor equipment . . . and has given us an invaluable reservoir to draw upon in meeting your material handling problems.

Check with your experienced Standard engineer before you begin your modernization planning. His recommendation will save on initial costs as well as assure continued economies in handling costs for the future.

For Production • Assembly • Packing Lines • Roller and Belt Conveyors

To keep things moving — on production, assembly, processing or packing lines—mechanize your handling with conveyors. Standard furnishes all types — power and gravity, belt, roller, slat, chain, push-bar, sectional.

TO CUT COSTS WITH CONVEYORS—ASK STANDARD

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minn.
Sales and Service in Principal Cities

Standard OVER 50 years of conveyor experience
GRAVITY & POWER CONVEYORS

Call the Standard engineer listed in your classified phone book, or write direct for Bulletin 309—address Dept. D-8.

Equipment & Supplies

Product is offered in 3 grades (designated 50, 100, and 200).—*Wallerstein Co., Div. of Baxter Labs., Inc., Staten Island 3, N. Y.* (333)

Instant Liquid Stabilizer incorporating emulsifier is offered dairy and other food fields. Called I.L.S., product comprises blended, modified vegetable gums liquefied under special suspension process. Cited is its rapid dispersion, "providing stabilizing effects within seconds."—*American Food Labs., 1,000 Stanley Ave., B'klyn 8, N. Y.* (334)

Gelatinized Wheat Starch, tradenamed Starvis, is called 'edible adhesive' as well as instantly wettable precooked starch. Maker says it ups absorption of various bakery mixes, standardizing their consistency and aiding stabilization of fat emulsions. Further use is in sausage binders, meat sauces, gravies, and soups.—*Huron Milling Div., Hercules Powder Co., Inc., Wilmington 99, Dela.* (335)

NEW SUPPLIES

Quick Sealer for Pipeline Joints is special Teflon-made tape readily applied around threading. Called Tape-Seal, product is completely inert, and it stands up under widely varying temperatures and pressures. Rolls of the tape are marketed in ½, ¾, and 1-in. widths.—*Friesland Plastics Co., Friesland, Wis.* (336)

Insecticide Fogger known as Real-Kill is designed for use between regular residual sprayings. It's 5-lb. industrial-size aerosol bomb employing 0.5% pyrethrins and a synergist in a formulation that's safe for use around foods.—*Real-Kill Co., Box 78, K. C. 41, Mo.* (337)

Special Food-Plant Cleaner, Liqui-Det No. 2 is non-toxic, non-solvent detergent. It is described as having excellent wetting-out and sudsing properties in either hard or soft water. Working solutions are economical, requiring only ½-2 oz. per gal. of water.—*Oakite Products Co., Inc., 126G Rector St., N. Y. C. 6* (338)

Tape for Testing Retorting is special crepe-paper backed, pressure-sensitive Scotch Brand product (Autoclave No. 222). Short strips tabbed on cans indicate proper retort sterilization by showing dark brown lines when exposed to required uniform-

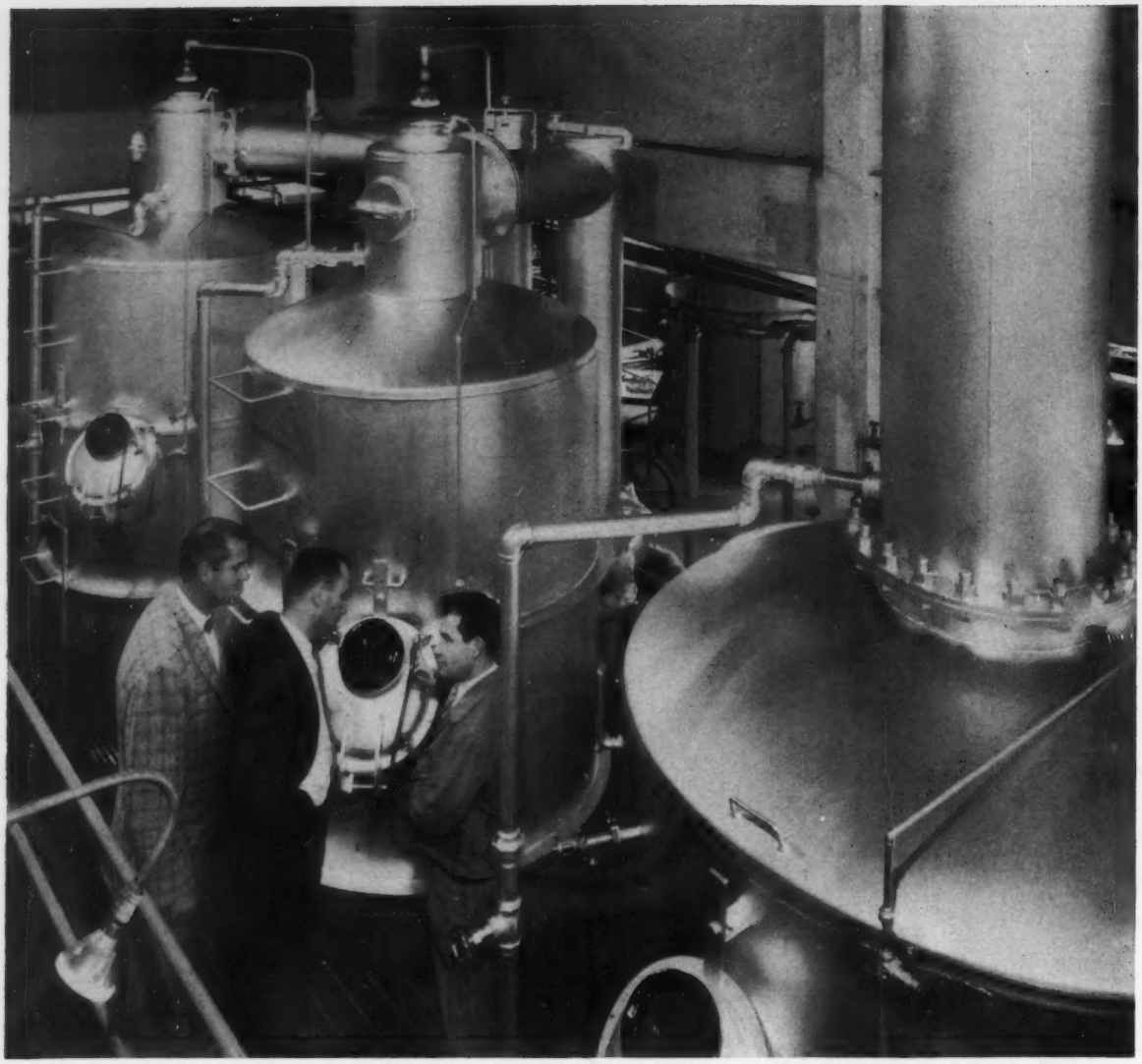
Here is Why!

You can dispense with oil filters and dust filters when you install ®Nash® Clean Air Compressors. You can save the cost of maintaining these devices. You can greatly reduce instrument maintenance costs. For the Nash employs no internal lubrication, therefore no troublesome oil is in the delivered air. Moreover, air from a Nash is thoroughly washed and cooled as it passes thru the pump. Dust in the plant atmosphere, even fly ash, is immediately removed.

®Nash® Clean Air Compressors are simple, with only one moving element. No valves, gears, pistons, sliding vanes, or other enemies of long life and constant performance complicate a Nash. No aftercoolers are needed. You will find it profitable to investigate these pumps, now.

No oil filters.
No dust filters.
No internal lubrication to contaminate air handled.
No internal wearing parts.
No valves, pistons, or vanes.
Non-pulsating pressure.
Original performance constant over a long pump life.
Low maintenance cost.

NASH ENGINEERING COMPANY
395 WILSON, SO. NORWALK, CONN.



Processing 40,000 tons of tomatoes a year, this Buflovak triple-effect evaporator accounts for 60% of the plant's annual output. From left to right: American Home Foods Technical Director, Arnold Cornett; Plant Engineer, Peter Mayer; and Production Manager, Larry Meck.

American Home Foods boosts tomato paste production over 100% with a Buflovak Triple Effect Evaporator

"Our triple-effect evaporator requires no more steam or labor than our other equipment uses." So reports Larry Meck, production manager of the Oakland plant of American Home Foods, Division of American Home Products.

The evaporator turns liquor of 6% solids into a paste of 30% solids. The process saves thousands of dollars in container and shipping costs each year.

Operates at 20% over capacity. "Although the evaporator is designed to evaporate 44,800 pounds of water, we push it during peak runs to 20% above this with no deterioration of product quality. Maintenance is simple and we have had no downtime at all for mechanical failures in three seasons of operation."

Let Buflovak boost your production. Buflovak has a completely equipped customer service lab to let you test a product in test tube or carload lots. And the Buflovak line of evaporators and dryers is complete. You select the unit best suited to upgrade your process based on impartial test results or your own specifications. For details send for Catalog 372 on evaporators, 384 on dryers, or 381 on the lab.

BLAW-KNOX

BLAW-KNOX COMPANY

Buflovak Equipment Division

1631 Fillmore Avenue, Buffalo 11, New York

pressure steam heat of 240F.—*Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn.* (339)

New Membranous Roofing material tradenamed Tremglas is luster-white coating made of glass filaments impregnated with strong elastic binder. Used for repairs of asphalt or tar-and-gravel roofs, it reportedly conforms readily to uneven surfaces.—*Tremco Mfg. Co., 8701 Kinsman Rd., Cleveland.* (340)

Labels Stay on Plastics—as polyethylene, polystyrene, acetate, etc.—when new Kleen-Grip adhesive is used, says maker. Applications, either by automatic machine or brush, are stated to be economical.—*Adhesive Products Corp., 1660 Boone Ave., N.Y.C. 60.* (341)

Plastic-Type Spray Lube that's sanitary, non-toxic, odorless, and tasteless, is applied to food-processing equipment from aerosol container. Product is heavy-duty Lubri-Film, offered in six-packs (16-oz. cans). Working range: −15F. to 210F—*The Haynes Mfg. Co., 4180 Lorain Ave., Cleveland 13.* (342)

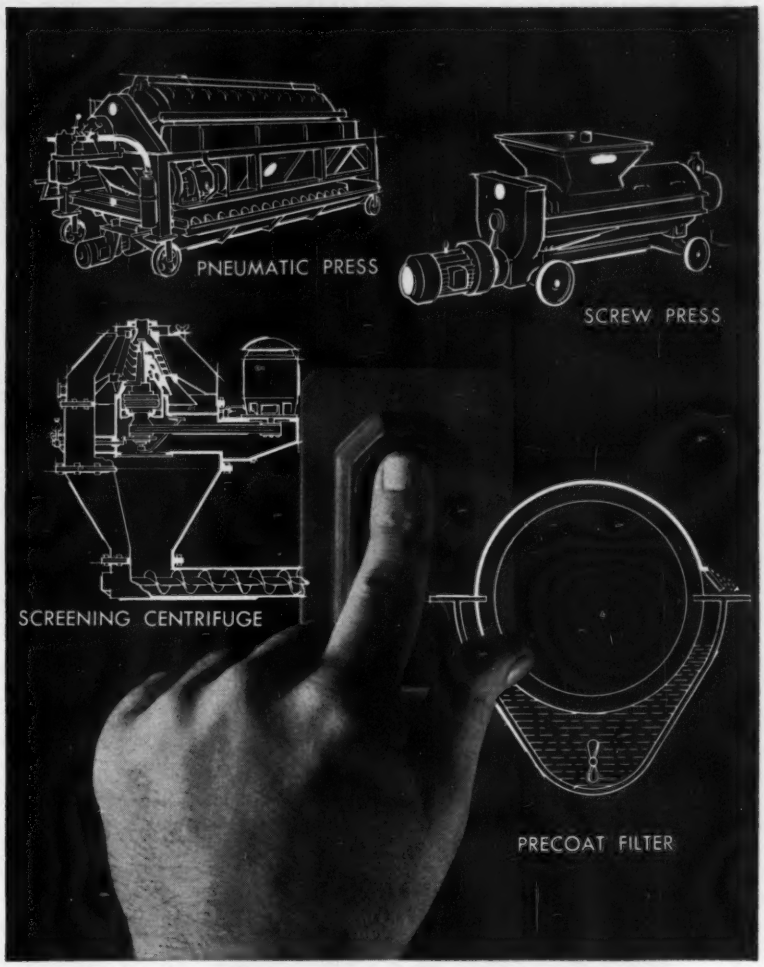
BRIEFS

Sausage-Meat Unit called the Emulsitator speedily turns out smooth, emulsified product. Features are long-life knife, easy loading hopper, quick cleaning.—*Allbright-Nell Co., 5323 S. Western Blvd., Chicago 9.* (343)

Folding Pallet Bin is offered for handier storing and transport of frozen food containers, also fruits, vegetables, bagged flour, sugar, etc. Unit is made of wood, fits standard 30x40-in. pallets.—*Cornish Containers, Inc., 205 W. Sophia St., Maumee, Ohio.* (345)

New Continuous Sausage Stuffer is vacuum controlled, vari-speed drive unit (7½-hp. motor) rated to process 6,000 to 18,000 lb./hr. using but a single stuffing horn. Economical operation and easy cleaning are cited.—*The Globe Co., 4,000 S. Princeton, Chicago.* (344)

Automatic Carton Selector sorts, counts, or inventories any of 7 different products through on-the-line photocell reading of codes printed on the containers. Designated Model 405, new unit is smaller-operation



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for automatic processing of fruit juices

PECTINOL brings the processing of fruit juices a giant step closer to continuous operation. How?—The batch hydraulic press is being replaced by more efficient equipment such as the Willmes press, Garolla press, or a combination of a screening centrifuge and a precoat filter . . . a move made practical by pectinolytic enzymes. PECTINOL enzymes break down the pectins in fruit and help to release juice from pulp cells; in the extracted juice they act on the colloidal pectic pulp particles for easier sedimentation and filtration. In the Garolla and Willmes presses, PECTINOL reduces the excessive slipperiness of Concord grapes and the gelatinous grape pulp. In using a precoat filter for clarifying apple juice extracted by a screening centrifuge, PECTINOL action on the high quantity of solid matter prevents clogging of the filtering surface, reduces the amount of filter aid used, and makes possible a practical and economical filtering rate.

Get more information on how PECTINOL can improve your juice processing by writing to Dept. SP-25.

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CIRCLE 229 ON READER SERVICE CARD

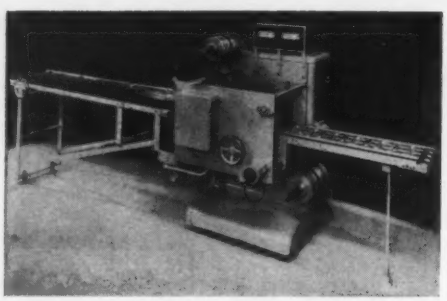
Epuipment & Supplies

version of highly selective Model 410 that distinguishes 31 codes.—*Atronic Products, Inc. Bala-Cynwyd, Pa.* (346)

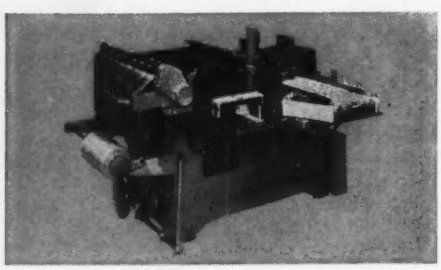
New Tallying Device, worn like wrist watch, is handy for anyone needing to keep a count in plant operations, shipping routines, actions in time-and-motion studies, and the like. Consecutive push of button register counts up to 99. Knobs are turned for simple re-set.—*Edmund Scientific Co., Barrington, N.J.* (347)

Inside Disposal Bag Feature is now offered for added sanitary convenience with E-Con-O-Vac series of industrial vacuum cleaners.—*General Floorcraft, Inc., 3630 Rombouts Ave., Bronx 66, N.Y.* (348)

Tramp Iron Removing Magnets are available in three new plate-type models. They are made of Indox V, an oriented ceramic magnetic material reported to give superior iron-scavenging performance. — *Stearns Magnetic Prod., Div. Indiana Steel Prod. Co., 635 S. 28th St., Milwaukee 46.* (349)



CHANGE PACKAGE SIZES WITHOUT EXCESSIVE DOWNTIME! Handwheel controls for varying the pouch width, and a simple gear change for varying pouch length, — both made without disturbing the heat-sealing units — provide almost instant adjustability. Thin articles (not necessarily uniform in shape) are pouch packaged between two endless strips of heat-sealing packaging materials at speeds up to 80 per minute. Pouch sizes range from a minimum of 2″ x 2″ x 1/16″ to 27″ x 15″ x 1½″ maximum. The "Flexopaker" is especially applicable for articles in the textile, food, automotive parts, industrial products, hardware or similar industries. High speed "Continuous Flow" performance but with a low price tag. **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**



REDUCE COSTS... PROTECT PRODUCTS... IMPROVE DISPLAYS... PROMOTE MULTIPLE SALES with Battle Creek's new Model 850 Automatic Bundler. This machine bundles groups of packages... 4, 6, 8, 12 and 24 to a bundle... at speeds up to 18 per minute. One operator can easily keep pace with a packaging line as high as 180 per minute. Depending on construction selected, the machine bundles with kraft paper, polyethylene, cellophane and other films; in bundles within 5″ to 12″ long, 4″ to 10″ wide and 1″ to 8″ high. Used for textiles, paper items, drugs, chemicals, cosmetics, food products... and/or what have you? **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**

Patented joint-locking device speeds installation, gives air-tight protection.

PACKER MEET HEARS

Food & Drug Code Calls for Maximum of Zero In Retailer Warehouses, Trucks, Store Cases

A standard zero temperature for frozen food products through every stage of distribu- Association of Food and Drug Officials of the U. S. The zero temperature require- Packers convention in Chicago. Making the presentation was Dr. C. S. Brinsfield, chief, divi-

Need sub-zero storage fast?

Cold storage rooms made of prefabricated Armorply modules go up quickly, economically; maintain temperatures down to −100°F.

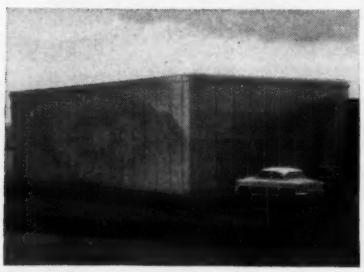
Cut installation time. Prefabricated Armorply modules, as manufactured by the Freezer Box Division of Annapolis Yacht Yard, Annapolis, Md., have a patented joint-locking device that eliminates sealing problems. Rooms can be assembled, expanded, dismantled and moved quickly with ordinary labor.

Cut installation costs. Armorply coolers can be installed directly on concrete slab, indoors or outdoors. In installation of freezing rooms, insulated floor sections are used. No masonry or other costly, space-taking construction is needed. And because the room can be installed quickly, you save on labor costs, too.

Cut maintenance. Weldwood Armorply—metal-faced plywood—never needs to be painted and it wipes clean easily. Strong, highly impact-resistant Armorply minimizes the need for repairs; yet if damage should ever occur, single panels can be replaced.

Give safe, sure temperature control. Armorply rooms maintain constant temperatures, warm or cold. Armorply will not absorb odors, and the modules' airtight fittings afford complete protection against vapor and vermin.

Armorply, metal-faced Weldwood waterproof plywood, comes with faces of aluminum, stainless steel, zincbond steel, copper, or any other metal laminated to a variety of core types. Send the coupon for details and your free sample of Armorply.



Armorply rooms, mounted outdoors on concrete slab, reflect away sun's heat.

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Why Hunter Packing Company uses STANOIL Industrial Oil

Two reasons: (1) STANOIL is a superior oil. (2) Along with STANOIL, Hunter Packing receives experienced lubrication technical service.

A special antioxidant in STANOIL gives the oil resistance to *chemical* change. Deposits are minimized. The oil has a high viscosity index, is resistant to *temperature* change. It lubricates effectively at both high and low temperatures. Due to special refining techniques, STANOIL will not readily emulsify. A special additive minimizes foaming. STANOIL has a low pour point. It flows freely at low temperatures. A rust inhibitor in STANOIL "plates out" on metal surfaces.

W. P. "Sandy" Wehking, the Standard Oil man who calls on Hunter Packing Company, has plenty of experience in technical service work. He's been at it for 17 years. Sandy studied chemistry at Blackburn College. He has also completed the Standard Oil Sales Engineering School.

To get more information about STANOIL Industrial Oil and to obtain technical help on your lubrication problems, call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

Quick facts about **STANOIL Industrial Oil**

- Antioxidant gives oil resistance to chemical change, minimizes deposits.
- Inhibitor "plates out" on metal surfaces, prevents corrosion.
- Receives special refining to eliminate emulsion problems. Contains additive to minimize foaming.
- High viscosity index. Resists temperature change.

You expect more from **STANDARD** *and you get it!*

Temperature check. Frank Persson of Hunter Packing Company and Standard Oil lubrication specialist W. P. "Sandy" Wehking inspect one of four compressors in Hunter plant that uses STANOIL Industrial Oil.

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Submersible Motor. Introduces new model with extra hp. capacity. Single phase ratings, 1½-5 hp., 3-phase from 1½-7½.—Louis Allis Co., Milwaukee. (388)

Electronic Air Cleaner. Covers principle, operation details, capacities, dimensions, etc., of dry unit. 16p. —American Air Filter Co., Inc., Louisville, Ky. (389)

Stainless Steel. Lists stocked forms of corrosion-resistant alloy, gives general corrosion and welding information. 4p.—Union Steel Corp., Union, N. J. (390)

Compressor. Tells how and why meat packing firm selected 100-ton rotary booster. 4p. — Freezing Equipment Sales, Inc., York, Pa. (432)

Adjustable Sheave. Details sizes, dimensions, and advantages of new model. 2p. — Allis-Chalmers, Milwaukee. (391)

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Mechanical Seals. Describes standard types and engineered models for mixers, pumps, autoclaves, etc. 4p. —Borg-Warner Corp., Los Angeles. (393)

Air Compressors. Describes horizontal, water-cooled, single-stage, heavy-duty model. 12p.—Pennsylvania Pump & Compressor Co., Easton, Pa. (394)

Centrifugal Pumps. Contains dimensions, design and material data, performance curves on small, versatile models. 4p.—C. H. Wheeler Mfg. Co., Philadelphia, Pa. (395)

Electronic Weighing. Covers history and development, theory of operation, instrumentation, economic considerations, and general data. 18p. — Streeter-Amet Co., Grayslake, Ill. (396)

Low Voltage Distribution Equipment. Condensed catalog covers circuit breaker load centers, fuse puller panels, safety switches, and other items. Includes selector charts for each product type, photographs, consolidated pricing tables, plus several pages of general application information. 84p.—General Electric Co., Plainville, Conn. (397)

Packaged Liquid Chillers. Reviews developments in firm's line, and details specifications of components. 4p. —Frick Co., Waynesboro, Pa. (398)

Valves. Introduces all-molded, corrosion-resistant PVC item. Details sizes, weights, dimensions, installation data, and recommended uses. 6p. —Lunkenheimer Co., Cincinnati. (399)

Steel Conveyor Pulleys. Lists prices, dimensions, and advantages. 4p. — Mercury Industries, Hillsdale, N. J. (400)

Aluminum Piping. Lists advantages, gives sizes, performance characteristics, conversion factors to determine bursting pressures. 6p. —Kaiser Aluminum & Chem. Sales, Chicago. (401)

Timing Belt Drive. Discusses versatile neoprene-imbedded unit that combines advantages of gear, chain, and V-belt drives. 4p.—Allis-Chalmers, Milwaukee. (402)

PROCESSING

Separators. Details capacities and design improvements of "air-tight" centrifugals for hot and cold separation, and clarifications. 4p.—De Laval Separator Co., Poughkeepsie, N. Y. (403)

Spray Nozzles. Gives data on four high-capacity, hollow-cone types. 4p.—Schutte & Koerting Co., Cornwells H'ts' Pa. (404)

Continuous Ice Cream Freezers. Describes 4 models with production capacities ranging from 13-300 gal. mix/hr. Two models are 3-cylinder type that permit one, two, or three flavors on

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This in-stream Refractometer can be mounted in wall of process vessel, evaporator, vacuum pan, product pipe line or other location where continuous reading is desirable. Quickly determines total soluble solids in turbid and dark-colored concentrates such as jellies, jams, purees, juices and syrups.

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2 **Prevents product waste:** In-process readings on *hot* product eliminates old-fashioned external sampling with its consequent product waste and time loss. Savings in product alone, in most cases, will pay for the instrument in one season.

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Spraying Systems Adjustable Joints, in sizes from ¼-2½ in. brass, steel, stainless. Ball and socket design permits positioning and rotating nozzle in 40-50 deg., arc.—Spraying Systems Co., Bellwood, Ill. (406)

Vibrating Screen Separators. Tells how models solved problems for various processors of wheat, soybeans, corn, meat by-products, etc. Cross-section shows various working parts. 4p.—Southwestern Engineering Co., Los Angeles. (407)

Bread Twister. Performance data on automatic unit that moulds, twists, and pans. 4p.—Baker Perkins Inc., Saginaw, Mich. (408)

Liquid Handling Equipment. Covers various filter models — including application tables, flow rate, and filtration area charts—bottle fillers, pumps, and mixers, for food, wine, etc.—Ertel Engineering Corp., Kingston, N. Y. (409)

Vacuum Chamber. Details advantages of unit for elimination of off-flavors from dairy products. 4p.—De Laval Separator Co., Poughkeepsie, N. Y. (410)

Micro-Pulverizer. Details basic uses in lab, pilot plant, and small batch production with specifications for areas such as bakeries, confectionery plants, wet milling operations, etc. 4p.—Pulverizing Machinery Div., Summit, N.J. (411)

PACKAGING

Containers. "Case histories" on packages that helped to "move merchandise." Discusses "main problem" of several products, and how each was solved. 10p.—J. L. Clark Mfg. Co., Rockford, Ill. (412)

Glass Packaging. Illustrates wide range of packaging problems, and tells how firm's new design center coordinates such activities as package engineering, graphic art, merchandising analysis, consumer motivation research, etc. 16p.—Continental Can Co., New York City. (413)

Paper Coatings. Details properties of new vinyl paper coating emulsions.—Dewey & Almy Chemical Div., Cambridge, Mass. (414)

Meat Packaging. Details machine for automatic molding and packaging of fresh and frozen links, patties, and chops.—Basic Food Materials, Vermilion, Ohio. (415)

Campbell Wrappers. Details basic machine and illustrates different models. Gives various standard types of seals and folds available. 12p.—Hudson Sharp Machine Co., Green Bay, Wis. (416)

Contract Packaging. Describes firm's facilities for product development, compounding, packaging, as well as warehousing and drop shipping. 4p.—Acepak, Inc., Chicago. (417)

MATERIALS HANDLING

Tote System. Spells out use in bulk materials handling. Exhibits and explains tote bins, tanks, tilts, and accessory equipment, used with automatic filling and discharge stations. 20p.—Tote System, Beatrice, Neb. (418)

Conveyors. Describes and illustrates gravity and power units for handling filled bags, cartons, boxes, crates, etc. 24p. — Standard Conveyor Co., North St. Paul, Minn. (419)

Lift Trucks. Performance, construction, and maintenance features of pneumatic tire series. 12p.—Hyster Co., Portland, Ore. (420)

Elevating & Conveying Machinery. Representative views of firm's products. Complete listings available in separate catalogs. 23p.—Jeffrey Mfg. Co., Columbus, Ohio. (421)

SANITATION & MAINTENANCE

Sanitary Engineering. Shows latest equipment, with flow diagrams of installation in typical water, sewage, and industrial waste treatment plants. Describes standard items such as screens, mixers, grit collectors, and such additional equipment as motor-driven scum skimmers,

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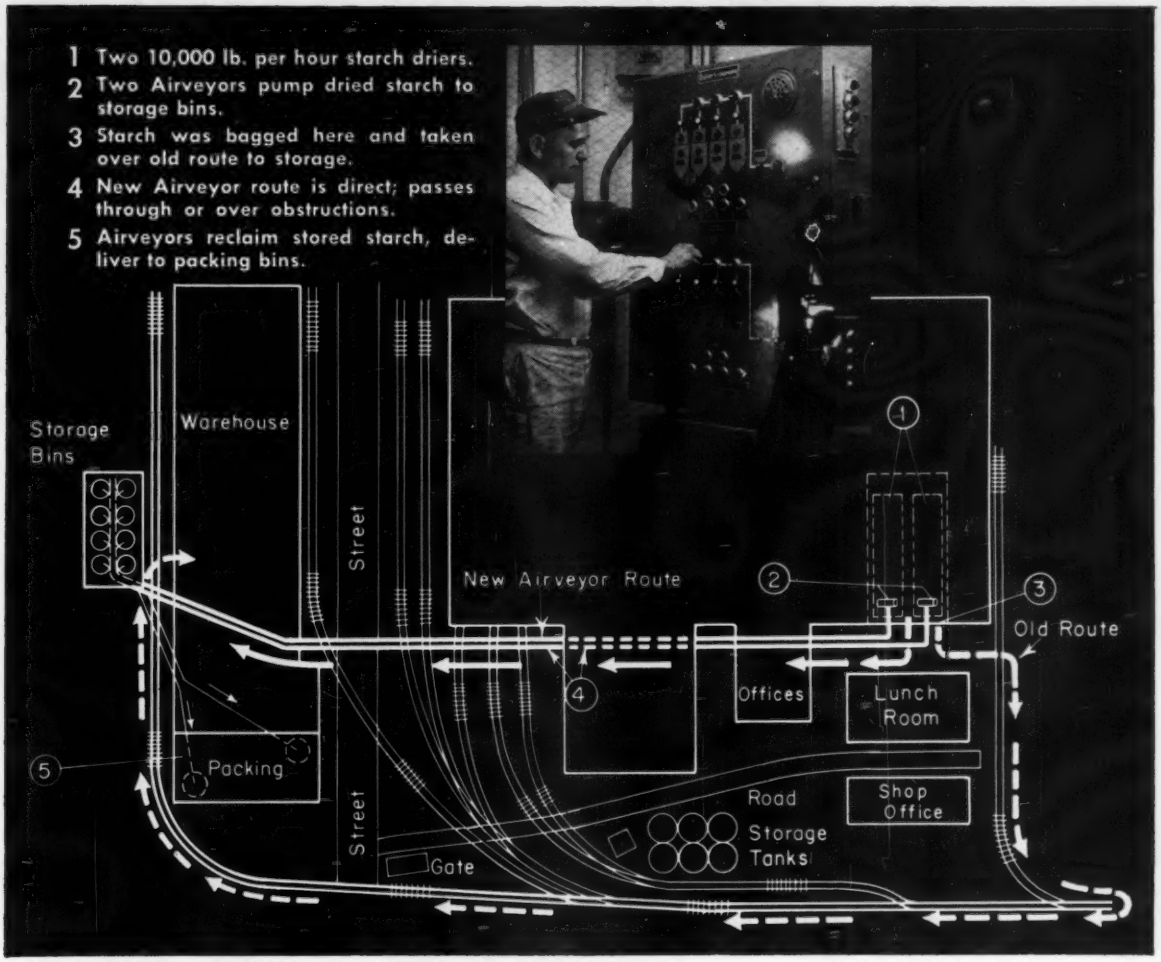
1 Two 10,000 lb. per hour starch driers.
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FULLER pneumatic conveying system increases production without plant expansion

To increase production, the Union Starch and Refining Company's Granite City, Ill., plant first needed to expand their materials handling system. But a complete revamping of bagging and warehouse operations was impossible because there was no space available for necessary new buildings.

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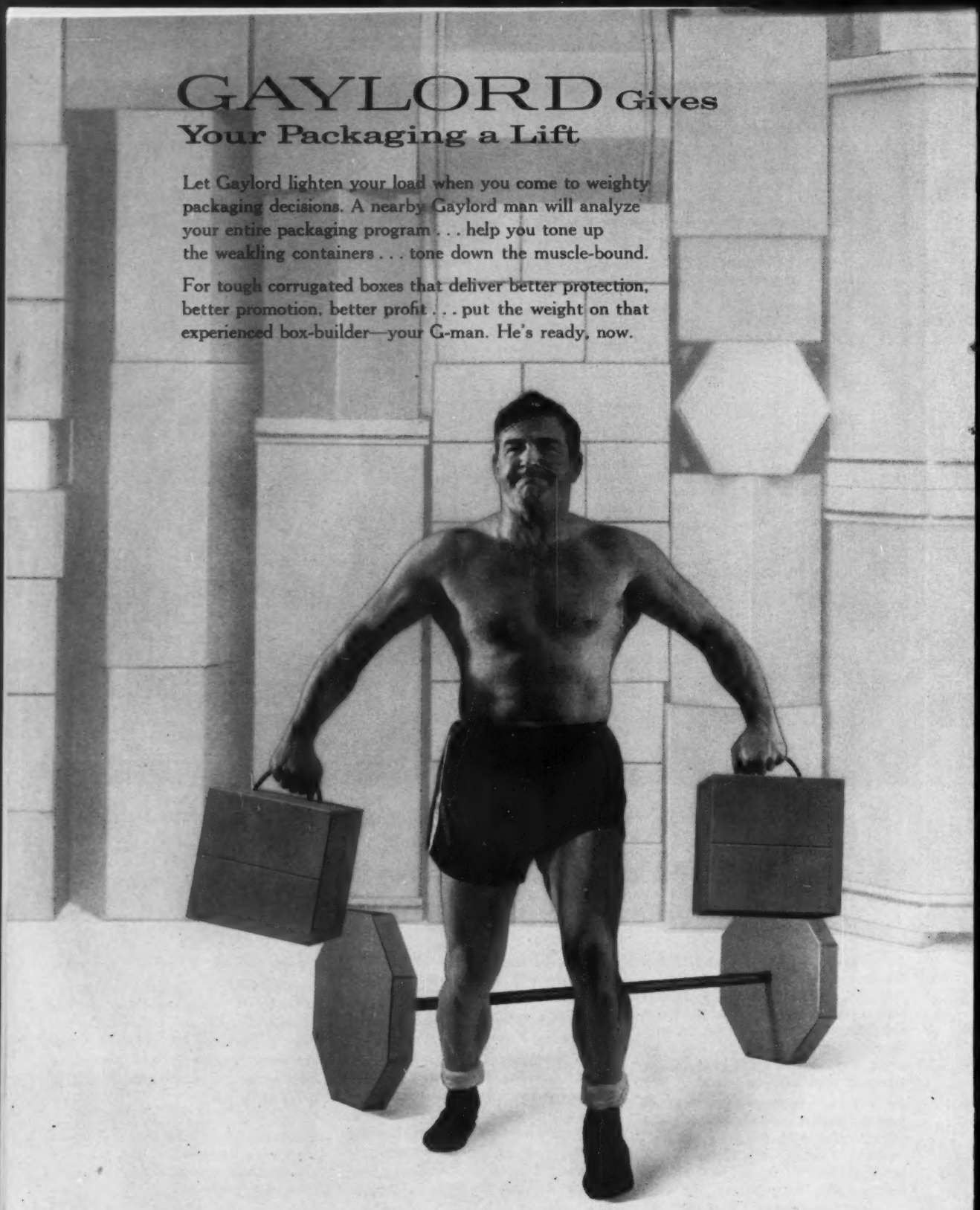

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traveling bridge sludge collectors, etc. 20p.—Link-Belt Co., Chicago. (422)

Boiler Cleaning. Details method said to result in 50% savings in fuel bills. 4p.—Breuer Electric Mfg. Co., Chicago. (423)

Cellular Materials. Decribes and illustrates such industrial products as sponge rubber, silicone sponge, cellular vinyl, etc. Indicates applications in sealing, vibration damping, shock absorption, insulation, flotations. 8p.—B. F. Goodrich, Shelton, Conn. (424)

Air Compressors. Technical reprint includes questions to help solve operational problems, list of frequent hazards and safety precautions, glossary of technical terminology. 4p.—Fuller Co., Catasauqua, Pa. (425)

INSTRUMENTS

Viscosity Control. Benefits, components, and operating principle of equipment for automatically adding solvent to correct for evaporation losses. 4p.—Norcross Corp., Newton, Mass. (426)

Temperature Regulator. Describes model designed for package air conditioners, hot water storage tanks, bottle washers. 2p.—Barber-Colman Co., Rockford, Ill. (427)

QUALITY CONTROL

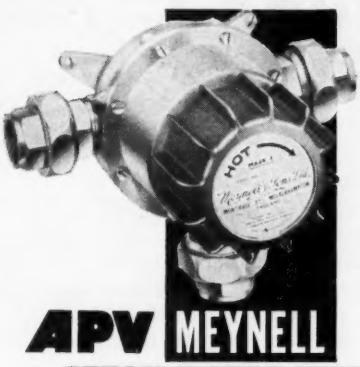
Packaged Liquid Coolers With Storage Tank. Describes units designed primarily for lab or pilot plant. 2p.—Doyle & Roth Mfg. Co., Inc., Brooklyn, N.Y. (428)

Gyro Sifters. Technical data and engineering drawings of lab units for bench or table mounting. 4p.—Sprout, Waldron & Co., Inc., Muncy, Pa. (429)

MANAGEMENT

Equipment Leasing. Study of pros and cons for smaller manufacturers. Cost charts compare cost with that of outright purchase and conditional sales contract buying. —Foundation for Management Research, Chicago. (430)

Punched-Tape Typewriter. Describes system for automatic machine-to-machine processing of paper work from initial document to final data. 8p.—Remington Rand, N.Y.C. (431)



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INVESTIGATE *the benefits of the revolutionary new . . .*

Mixes steam and water in correct proportions to suit demand. Eliminates need for reducing valves and ends heat loss.

- ★ SIMPLE TO FIT — can be used in any position vertical, horizontal.
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World's leading Dairy Processing Engineers

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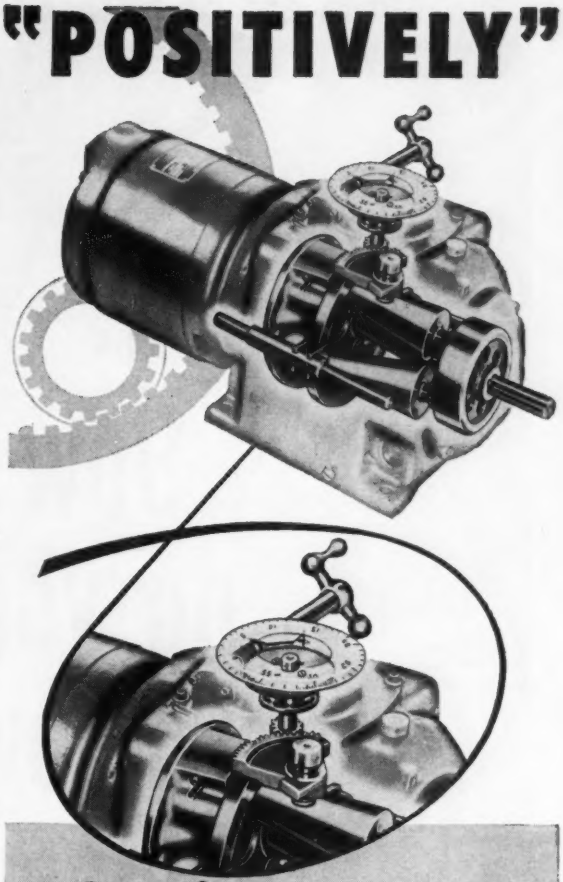

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Now get accuracy of speed set, reset and speed holding over full range—any desired maximum to zero—with the most *positive* of infinitely variable speed drives . . . the GRAHAM. More *positive* than the induction motor that drives it, the GRAHAM gives unequalled speed regulation with change of load, plus built-in overload protection. The GRAHAM offers a wide choice of built-in motors, reducers and controls—pneumatic, electrical and a micrometer type with 4000 graduations for full range.

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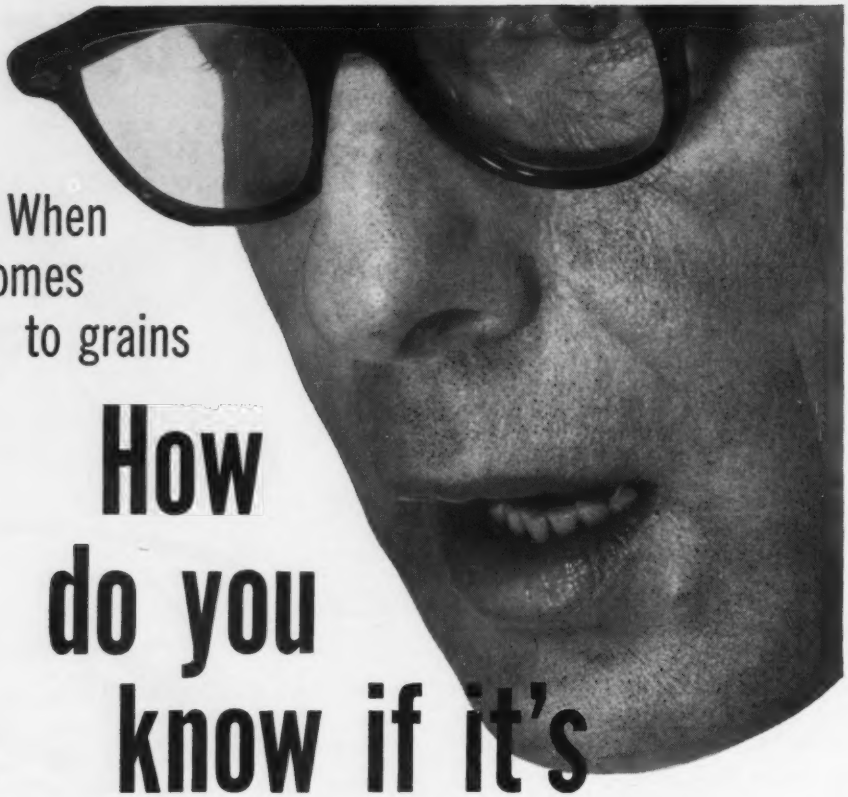

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There's no problem in evaluating recommendations when the recommendations come from Quaker. Because The Quaker Oats Company offers numerous standard dry milled items and products that cover wheat, corn, rice, barley and oats in a broad range of meals, flours and grits, Quaker is able to advise the *right* cereal to meet your problem. There is no need to offer substitutes or alternate grains. And, the advice you receive is based on *decades* of service to the nation's food processing industries.

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  OATMEALS.....6 sieve sizes
  ROLLED OATS.....11 flake sizes
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  INDUSTRIAL FLOURS
  FARINA
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  AVAILABLE (to your specs)
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QUAKER

USEFUL NEW BOOKS

Guide to Plant Protein

PROCESSED PLANT PROTEIN FOODSTUFFS *edited by Aaron M. Altschul. Published by Academic Press, Inc., 111 Fifth Ave., New York City 3. 1958. 955 p. Price: $26.*

If you are interested in the sources, production and processing of plant protein foodstuffs and how they are used and why they are used, this book is your key. Its general aim is to present information needed alike by growers, producers and users, bridging the gaps between different kinds of knowledge and interest.

Organized to present both a broad view of the problems and practices in the manufacture and use of processed plant protein foodstuffs and a detailed discussion of the major protein sources, the book is divided into two parts. Part I deals with broad aspects of plant proteins and their utilization in animal and human foodstuffs. Part II deals with the individual commodities.

More than 30 leading authorities in the field have contributed.

Booklets & Reports

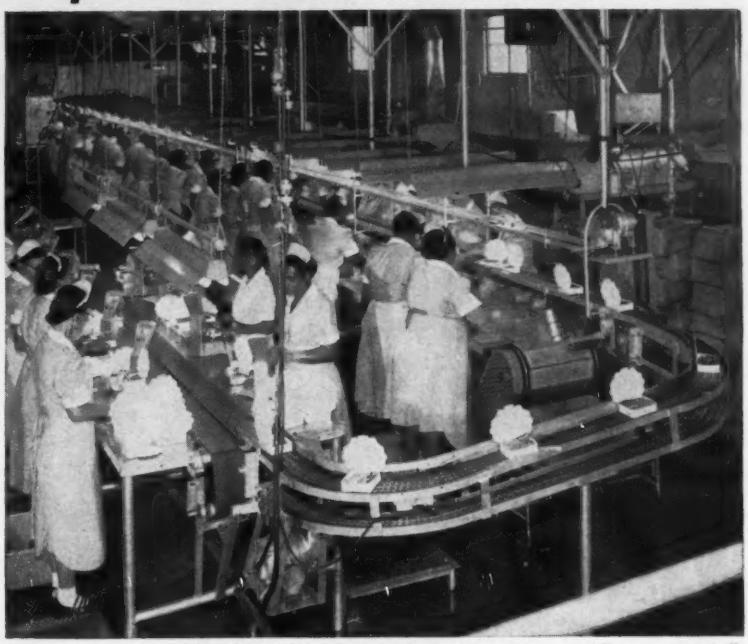
RESEARCH AND DEVELOPMENT IN THE CORPORATION *Published by American Institute of Management, 125 E. 38th St., New York City 16. Price:* $12. Management takes a look at R & D in top corporations.

OUTLOOK FOR INDUSTRIAL RELATIONS AND PERSONNEL MANAGEMENT *(Management Report No. 249), published by California Personnel Management Association, Farm Credit Building, 2180 Milvia St., Berkeley 4, Calif. 1958. Price:* $1.00. Summary of the field check and survey among Pacific Coast industrial relations and personnel executives on their plans, views and experiences in preparing to meet the uncertain problems of the future.

USE OF SUPERVISORY MANAGEMENT MAGAZINE IN SUPERVISORY DEVELOPMENT PROGRAMS *published by American Management Association, 1515 Broadway, New York City, 36.* A survey of actual company experience. 1958. Price: No charge.

TOWARD A HEALTHIER WORLD *published by U.S. Department of Health, Education, and Welfare, Washington 25, D. C. 1958. Price:* 25¢. Discussion of careers in sanitary engineering.

Keep Your Product on the Move



Ashworth Omniflex Belt carries frozen asparagus . . . rapidly . . . economically

with ASHWORTH METAL PROCESS BELTS

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CIRCLE 127 ON READER SERVICE CARD

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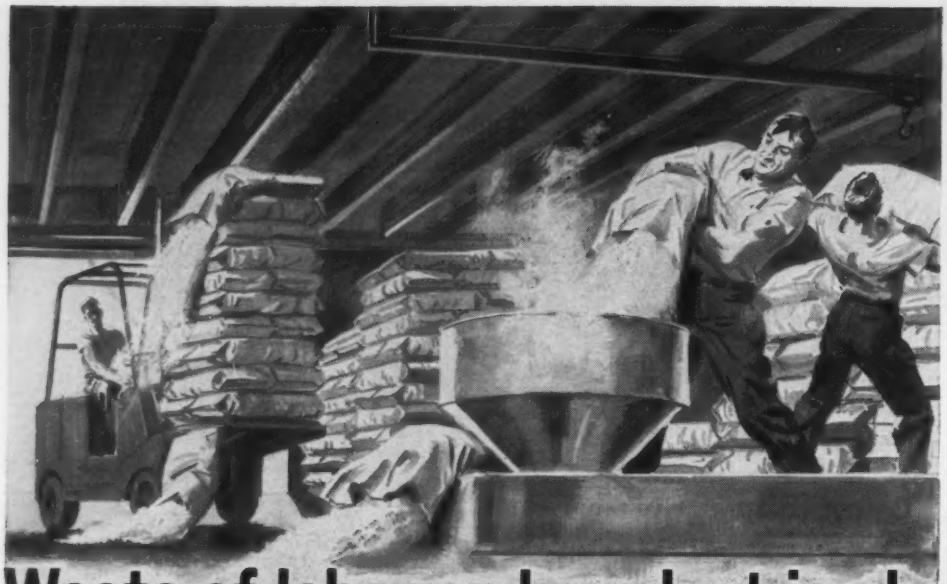
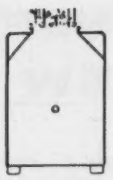
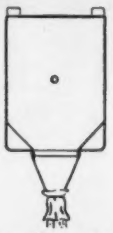
It's at the back of this magazine. For free information and literature note the number appearing at the end of editorial items and advertisements. Circle this number on the Reader Service Card and drop in the mail. We do the rest—no obligation, of course. Don't fail to look over our free editorial reprint offer on the Reader Service Page.



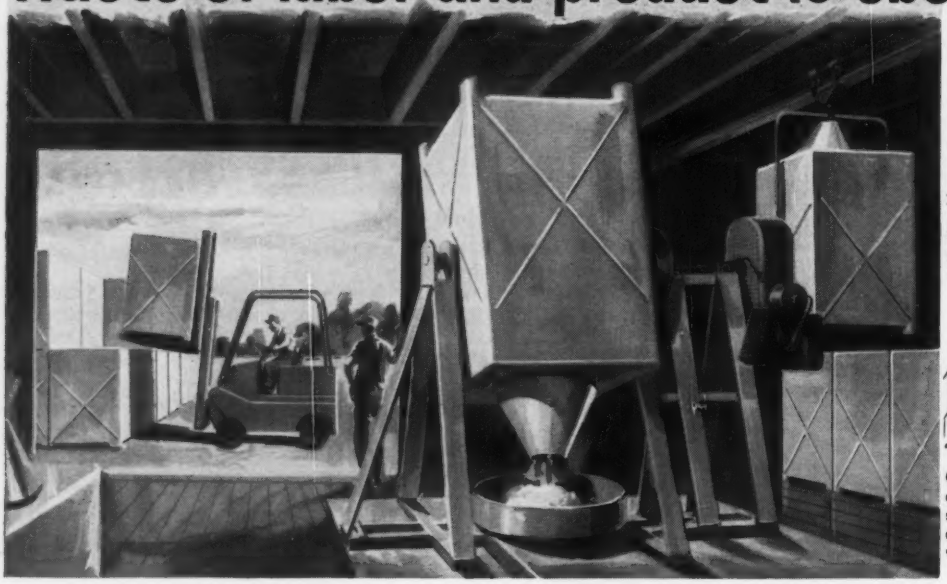


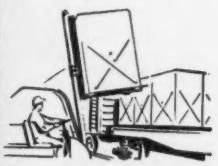
Fills Fast—22" opening permits fast filling of powdered materials. Internal cone conforms to angle of repose of product.



Empties Clean—Internal cone funnels all materials out of bin. No residue remaining.

Waste of labor and product is obsolete...





Stores Outdoors—Weatherproof, turns yard area into warehouse. Stacks 2 high.

Cuts Shipping Costs—low cost flat-bed equipment considered part of special rail car with "freight free" advantages.

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Waste of labor, product, floor space, time is now outmoded—eliminate it in your plant today.

Powell's new Invert-a-bin* Semi-Bulk Handling System has put an end to the biggest headache in handling granular products. These sturdy, easy-to-handle steel or aluminum containers are easy to fill and easy to empty. Weatherproof, they can be stored outdoors freeing indoor storage areas for production.

Ideal for inter-plant or intra-plant these units are considered part of special rail car with "freight free" advantages. Due to the simplicity of design, maintenance of the Invert-a-bin* is nil.

Why continue losing time and money with old style disposable packages when this remarkable new Invert-a-bin* is immediately available on either lease or purchase. Write for literature today!

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complete kraft packaging service

...from plant to kitchen shelf!

Let the Olin Mathieson kraft packaging team help solve your packaging problems—with tough kraft containers designed for extra protection—with colorful cartons and carriers designed for extra sales! And this complete packaging service is now available from a single source of supply! Contact the Olin Mathieson kraft packaging team today: Packaging Division, W. Monroe, La.

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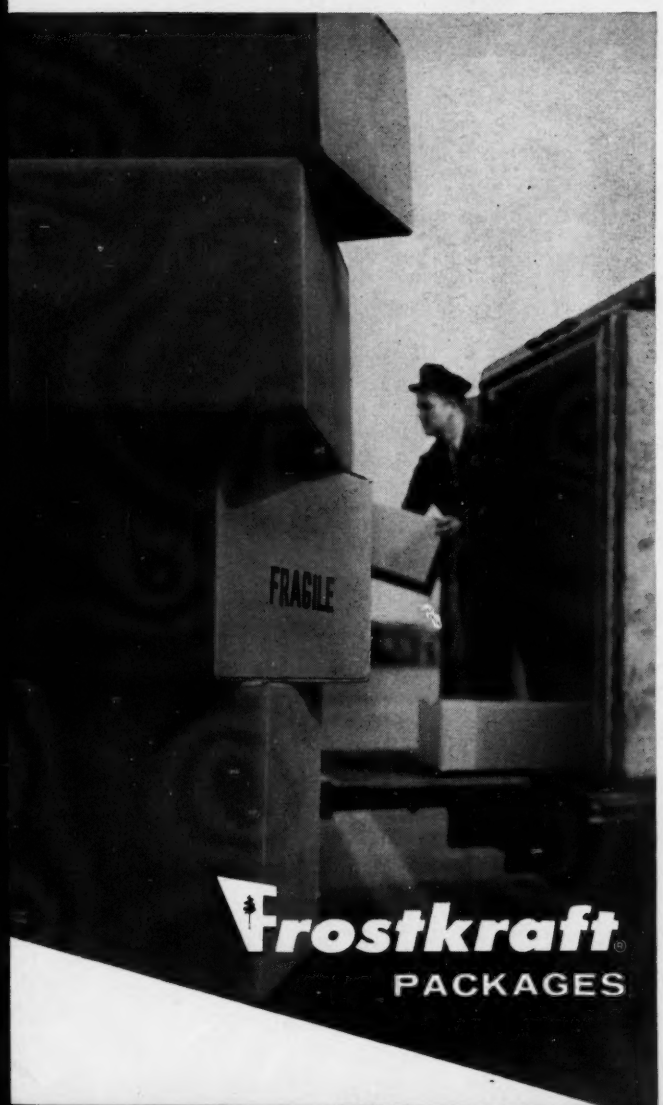

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Swiss-Type Cheese With Curd Subjected to Vacuum Before Salting and Curing.—National Dairy Products Corp., N.Y.C. No. 2,871,126.

Cheese Spread Comprising Milk Solids, Emulsifying Agent, Water, Hard Cheese and Milk Fat.—Standard Brands, N.Y.C. No. 2,871,-127.

Cheese Paste Marbleized With Green Mold Filaments.—Ercole Locatelli, Robbio, Lomellina, Italy. No. 2,872,324.

Meat-Like Spread Consisting of Oil-Protein Flakes and Aqueous Fat Emulsion.—Lever Brothers, N.Y.C. No. 2,874,-049.

Dough Adjunct Comprising Calcium Peroxide, Brewer's Inactive Yeast, Proteolytic Enzyme.—Bred-Ade Corp., Oak Park, Ill. No. 2,875,064.

PROCESSING

Stabilizing Color of Canned Meats With Ascorbic Acid or Its Analogues.–Swift & Co., Chicago. No. 2,860,993.

Preserving Fresh Produce by Wrapping in Oriented Film and Blanching.–E. I. du Pont de Nemours & Co., Wilmington, Del. No. 2,865,765.

Coating Products With Dry or Adhesive Materials by Means of High-Frequency, Low-Amplitude Movement.–Rath Packing Co., Waterloo, Ia. No. 2,865,766.

Spraying Peaches With Wax Dissolved in Refined Vegetable Oil.–Food Mach'y. & Chemical Corp., San Jose, Calif. No. 2,866,709.

Creamed Cottage Cheese by Depositing Dry Curd and Cream In Container That's Sealed and Inverted Roll, Then Dairy Products Corp., N.Y.C. No. 2,867,537.

Forming Meats With Multiple Surfact Cuts Into Roll, Then Applying Pressure.–Armour & Company, Chicago. No. 2,-868,650.

Tube Forming Salted Curd to Produce Cheese.–Nelson-Ricks Creamery Co., Salt Lake City. No. 2,868,651.

Coating Meats With Ethyl Cellulose.–Dow Chemical Co., Midland, Mich. No. 2,868,-656.

PACKAGING

Aseptically Sealing Containers by Directing Steam and Then Steam-Air Into Headspace Prior to Sealing.–Anchor Hocking Glass Corp., Lancaster, O. No. 2,869,300.

Expandable, Contractable Polyethylene Tube to Prevent Splitting and Facilitate Slicing of Packaged Cookie Dough Mix.–H. R. Anderson, Cress-Kill, N. J. No. 2,870,022.

Edible Oil Container Having Threaded Portion of Spout Coated With Alkali Metal Dihydrogen Orthophosphate Salt. –Proctor & Gamble, Cincinnati. No. 2,871,130.

Water-Impervious Poultry Pouch With Perforated Base and Designed to Fit Into Rectangular Fox.–Armour & Co., Chicago. No. 2,871,131.

EQUIPMENT

Sugar Drying-Cooling System Comminutor Comprising Prodtable and Secondary Driers.–Buttner-Werke Aktiengesellschaft, Krefeld-Uerdingen, Germany. No. 2,869,248.

Comminutor Comprising Product-Delivery Pump, Chamber With Bladed Rotor and Steam-Pressure Connection.–W. J. Fitzpatrick, Chicago. No. 2,-873,663.

Rack for Forming, Smoking and Cutting Sausage Products Like Frankfurters.–E. D. Lampard, Grand View on the Hudson, N. Y. No. 2,874,403.

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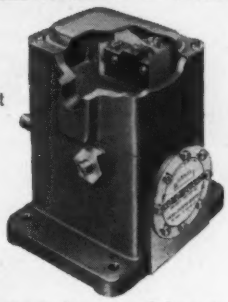

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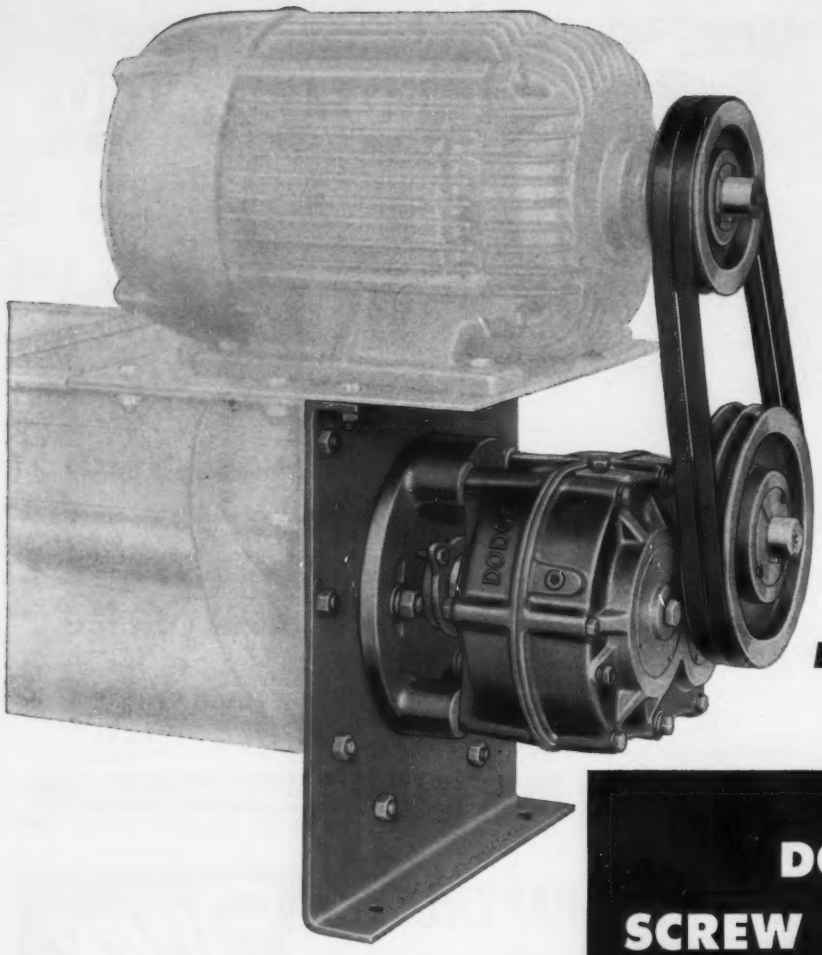

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- **External Packing Gland.**
- **Trough End (optional).**

Amazing new ease of installation—new ease of maintenance—new economy! No external thrust bearing or motor base is necessary. (However, a motor base of special design is available as optional equipment.) Pre-selected Taper-Lock V-Belt drives give required speeds. Built-in puller makes it easy to change driving shaft—without opening reducer. External packing gland protects reducer. Helical steel gears. Timken Bearing equipped throughout. Available from stock with 1½", 2", 2 7/16", 3" and 3 7/16" driving shafts. Ask your Dodge Distributor, or write us for bulletin giving complete technical data.

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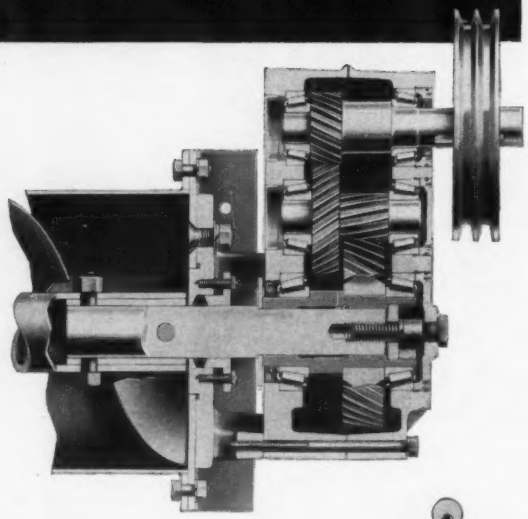

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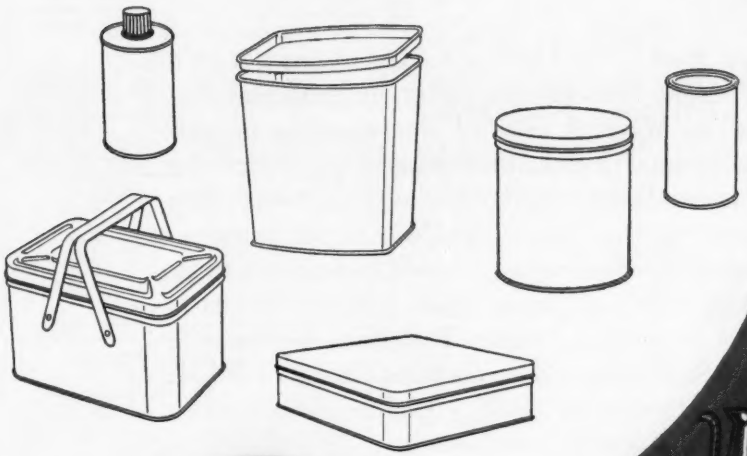

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Product Planned
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makes food

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This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate rebuilt and used Food processing equipment not currently advertised. (This service is for USER-BUYERS only.)

How to Use: Check the dealer ads to see if what you want is not currently advertised. If not, send us the specifications of the equipment and/or components wanted on the coupon below, or on your own company letterhead to

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Food Engineering, Classified Advertising Division, P.O. Box 12, N. Y. 36, N. Y.

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c/o Classified Advertising
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8/59

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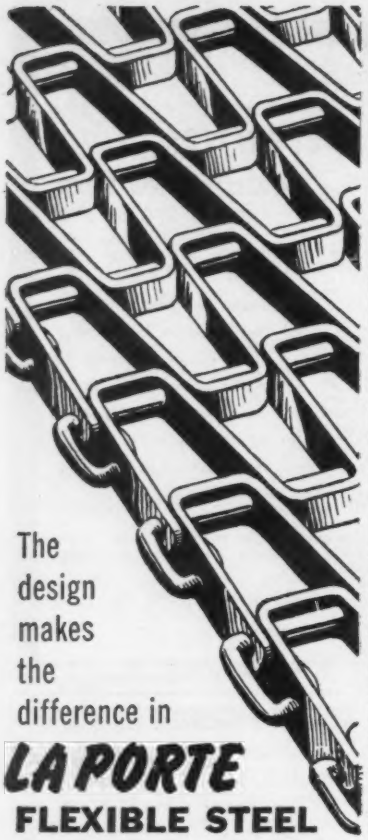

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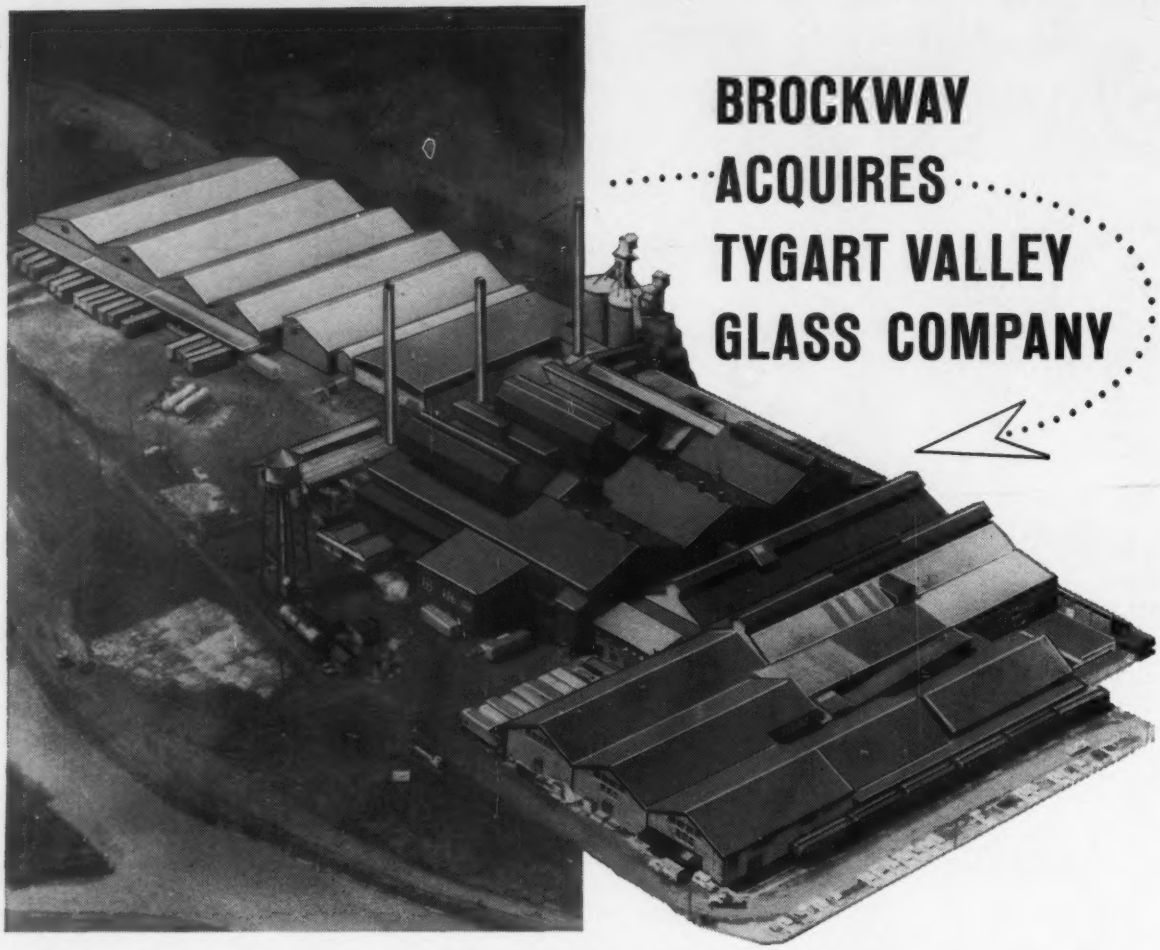

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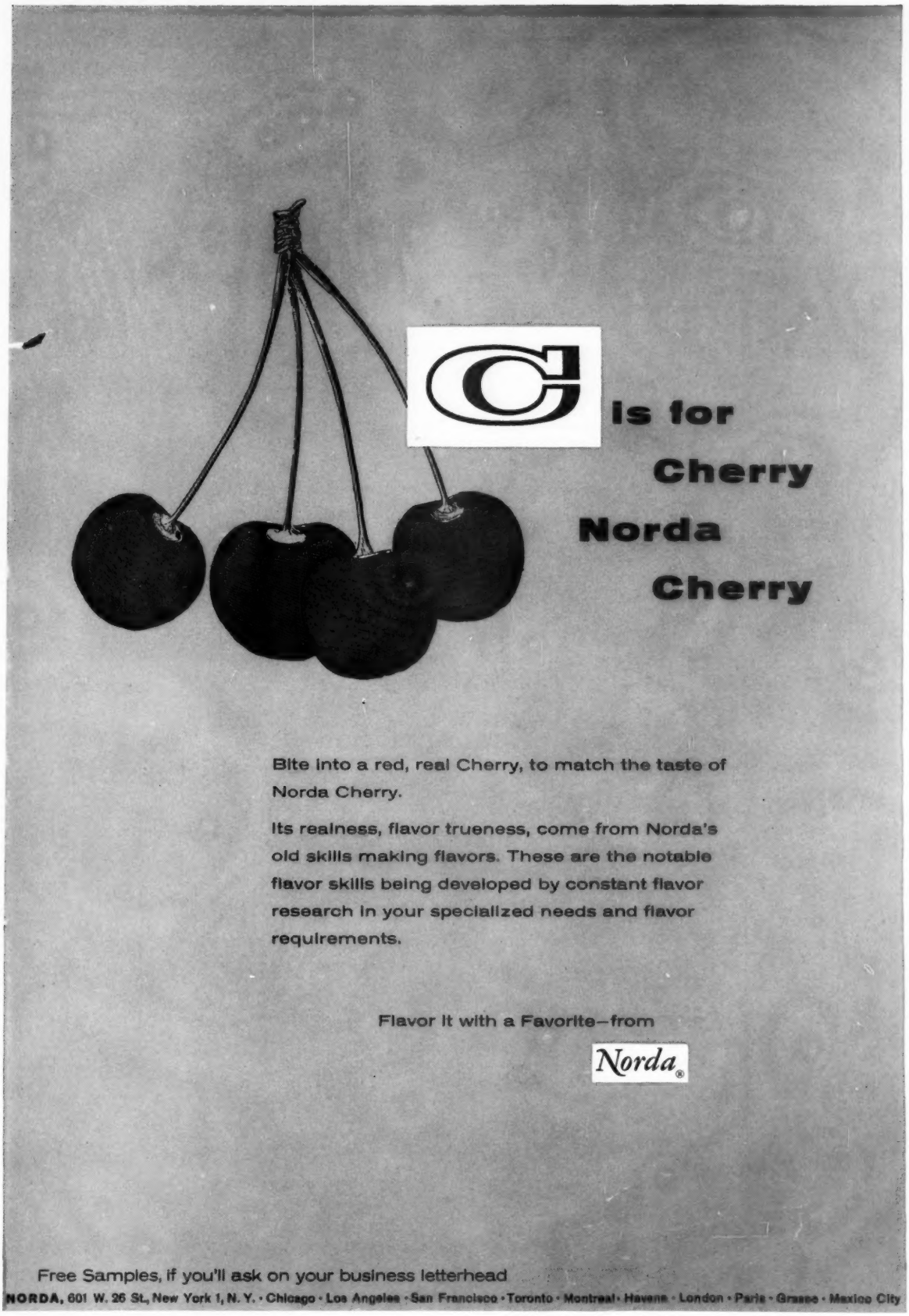
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